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Briefing

British firm in trouble

IARK'S national com-
puter manufacturer, Regnecen-
has run into liquidity
trouble and given notice to its
employees. The company
owns a powerful 24-bit
ter, the RC3600, and a
based remote batch ter-
system, the RC3600, and
is an attractive acquisi-
tion either ICL or CII-
well Bull. Neither com-
pany has any comment on a
rescue.

Hardware run down

With rapid changes in the
business systems market-
tergo has decided to run
its two-year-old hardware
down focused on the PDP-
11 Avenger and an Intel
processing system, the
161. The latter will con-
tinue to be marketed in the Nor-
thwest by the firm's Scan-
in subsidiary.

Figure sale

KAGE designed by Sys-
designers to enable view-
users to access non-
na databases has been
insac to the German post
for a "six figure sum."
While in the US the long
out talks go on with an
and partner to launch a
viewdata service, fol-
lowing insac will concen-
trate on the market for private
and closed user groups.

Ant quotations

ANT insurance quotations
can be available from Legal
general, the life insurance
which plans to install a
P210 system at each of its
offices. These will produce
plans relating to about 20
nt insurance plans, infor-
mation on each plan being input
Philips mini-cassette. The
is the result of a three-
year trial of the equipment.

Prices down

Prices of the Artec Internatio-
play 2000 word processor
been slashed by Data
tics. Single units are
£5,500 from £6,950 and
units of more than 25,
£4,950 per unit.

1/2 release

1/2 compiler running
RPS on IBM's Series 1 has
released by SPL following
completion of its insac-
development pro-
gram. SPL has also released a
mode RTL/2 compiler for
Equipment's Vax-11/780.

16-bit chip

INS plans to begin ship-
processors using its own
memory chip next year.
Company says that the
chip is fully competitive
with the services on-
line US and Japanese
chips.



GEORGE BROWN...
call for a new strategy.

'Disaster' if NEB disbanded—George-Brown

IT would be disastrous if the National Enter-
prise Board were to be disbanded, according to
Lord George-Brown. Funds from such an or-
ganisation were vital to the development of
some high technology projects, he said, but he
emphasised that it should not be used as a back
door to nationalisation.

Talking in London to a group of GSI users
from Europe, Lord George-Brown said there
would be an ongoing role for an organisation
such as the NEB to provide support for devel-
opments where risk was initially too high for
commercial investment. But it was important
that such investments should be carefully
selected.

He criticised the slowness and lack of in-
itiative of finance houses and the City in
general to provide capital for some of the
ventures now being funded by the NEB.

Recalling that as Minister responsible for the
economy he had established the Industrial
Redevelopment Corp in the Sixties to play a
similar role to the NEB, he pointed out that
although State money should be used to get
projects off the ground, such investments
should not be retained and that funds acquired
from successful ventures should go to help new
developments.

Following the General Election, he called for a
new strategy that would overcome the
economic stagnation from which, he claimed,
this country had been suffering for several
years. He believed that an essential part of such
a strategy would be a positive commitment to
the idea of a united Europe.

Linking economic decline with external
isolation he said the UK could become a leader
of the European community. With our in-
ventive ability and research capacity, he said, the
UK was ahead of the world in many areas and it
was essential that this potential should be
exploited.

Forecasting a change of administration

Intel picks UK Cobol compiler

IN what should prove a major coup for a British software
house, Micro Focus is expected to announce next month that
its CIS-Cobol compiler is to be marketed worldwide by US
microprocessor giant Intel. The compiler could become Intel's
standard Cobol capability for 8080-based systems, and will be
the first time it has shopped outside its own resources.

All Systems Go for Compec Europe

IT'S "All Systems Go" for
Compec Europe which is being
held at the Centre International
Rogier in Brussels from May
8-10.

Even in the last few weeks
before the show is due to take
place, exhibition space has been
sold, and 125 stands have now
been booked, a significant in-
crease on last year's total.

The organisers expect more
than 2,000 to visit the exhibi-
tion over the three days. And
experience shows that these
people will be computer pro-
fessionals from large installa-
tions, systems designers and
software specialists working
not only in local commerce and
industry but also in the multi-
national corporations and inter-
national agencies, including of
course the EEC, which are
based in Brussels.

Gould bids for Fairchild

THE Board of Fairchild
Semiconductor meets in Moun-
tain View, California today
(Thursday) to decide on an un-
solicited takeover bid from
Gould Inc, one of the potential
suitors of US microcomputer
manufacturer, Modcomp (CW,
December 21/28, 1978).

The £140 million bid is for 45%
of Fairchild common stock at
\$34 per share with the balance in
Gould common stock.

There are already hints that
the company will resist the bid, if
only to find a suitor offering
more attractive terms. There has
been speculation that such a
suitor could be GEC.

A taste of micros

AN imaginative work-
experience scheme to give
schoolchildren a taste of the
microelectronics industry has
been under way for a year at
Rockwell International's factory
in Anaheim, California.

Three high schools in Orange
County were approached to see if
they had maths or science
students interested in earning a
little money after school, and
during the year 18 have been
working in the plant.

"The average age is 15," said
Malcolm Northrop, Rockwell
Northrop.

TUC plans for new technology

A PLAN for new technology
agreements between manufac-
turers and trade unions as a
method of overcoming the tech-
nological changes stemming
from microelectronics is one of
the key elements set out by the
TUC in an interim report
Employment and Technology,
published last week.

The major principle involved
would be the agreement that no
new technology which has ma-
jor effects on the work force
should be introduced multilat-
erally.

The report suggests that full
agreement "on the range of
negotiating issues" should be a
pre-condition of any changes in
technology in industry.

With long-term employment
prospects the main considera-
tion for the TUC, the report
stresses that "at every stage
technological change should be
linked with a reduction in the

Battle over NEB's £8m for disc drive firm

DESPITE opposition from one of
the minority shareholders in
Data Recording Instruments,
the National Enterprise Board is
pressing ahead with a plan to
inject another £8 million into
DRI to establish a joint disc
drive manufacturing operation
with the Control Data sub-
sidiary, Magnetic Peripherals
Inc.

Grundy (Teddington), which
formed DRI in the 1950s and still
owns 13%, is taking legal action

76% owned by DRI and the rest
by MPI. The NEB has already
put nearly £5 million into DRI
since it took the firm over three
years ago (CW, July 26, 1978).

Buying out the NRDC could
cost the NEB another £1.5 mil-
lion, the estimated value of the
NRDC share.

DRI is currently the holding
company for three firms, New-
bury Laboratories, Data Recor-
ding Instruments and MPI.

● Turn to page 3

New CH-HS disc drive — P 55

to stop the deal going through,
claiming that the prospects of
the new venture are uncertain.
The NEB has called for an ex-
traordinary meeting of
shareholders to push the MPI
deal through.

The only other minority
shareholder in DRI is the Nation-
al Research Development Corp
with 24%. The NEB will buy out
the NRDC stake following the
deal with MPI.

The new disc company will be

INSIDE THIS WEEK'S CW

SOFTWARE FAIR	
Software was a major feature of the Hannover Fair, this year with far more companies taking space to show their products. Peter Hewitt reviews the systems offered in Software File (Page 7), and Tim Palmer reports on some more of the hardware on show. Page 16	
DATABASE RESPONSE	
Has Stewart's series on Relational Databases has attracted a lot of attention and many readers have written to seek more information. and discuss various aspects of the system. This week's Database File reports on the points raised. Page 6	
ALSO...	
Computer view on poll	2
Focus on recruiting	2
Philips viewpoint venture	3
Middle's Privatization	4
Programmer Notes	7
Puzzle	8
Deputy	8
People in the News	10
Diary Dates	10
The Switch to MVS	11
Micro News	12
Letters to the Editor	12
Computer news results	17
Shiploader badly in winning	20
Financial News	21
News Bit	23
Small Business X	24

JOB VACANCIES: PAGES 26-54

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Deputy Editor
Tony Higgins 01-261 8696

Advertisement Manager
Harry Hutson 01-261 8598
01-261 8503

Class Ad Manager
Brian Durrant 01-261 8597

IPC Electrical Electronic Press Ltd.
Dartford House, Stamford Street,
London, SE1 8JL
Telephone: 01-261 8500
Telex: 9121 8500
Telegrams: 26137 8500

Branch Offices:
Birmingham: 215, High Street, B1 2LP
Tel: 01-261 8500
Manchester: 215, High Street, M1 2LP
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New York: 215, High Street, NY 10001
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Members of Computer Weekly staff
may be contacted directly on the
extensions listed below. Other de-
partments in Dartford House may be
contacted by dialling (01) 261 8500.

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Peter Hewitt	261 8303
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Marion Banks	261 8308
Robin Webster	261 8370
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Ken Welford	261 8174
Nanette Gibbs	261 8174

Manchester

Owen Kelly	061-872 4211
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Birmingham

Paul McGowan	021-356 4838
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Production

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Steve Robinson	261 8078
Peter Regis	261 8016

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Contributors: London Department: IPC Business
Press Ltd, 215, High Street, London E14 6TJ. Tel: 01-261 8500.
Birmingham: 215, High Street, Birmingham B1 2LP. Tel: 01-261 8500.
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Platitudes in place of policies

PLATITUDES are no substitute for policies. That somewhat obvious thought is provoked by the statements from the three main political parties in last week's Computer Weekly, provided in response to our invitation that they should use our columns to express their policies on computer technology.

All three of our eminent contributors found it necessary to indulge in the ritual posturing which is such a deplorable feature of the political scene. And all took a somewhat restricted view of what computing is all about.

Adopting his well-known role of prophet of the microelectronic revolution, Jim Callaghan reviewed the support and encouragement which the government has provided in the micro field, and concluded that "Only a Labour government can ensure that our people as a whole derive the benefit of micro-technology".

But that was hardly a view which Ian Lloyd would accept: "In adopting and adapting micro-electronics the solution is not going to provide the solution. In the silicon revolution the pace is being set in California where the free enterprise system suffers the least from government interference."

"A new Conservative government will do its best to ensure that the UK will provide just as congenial an environment to British genius and innovation as 'Silicon Gulch' in the US," he asserted, somewhat optimistically.

For his part, Lord Avebury contended that "The Liberal Party has never believed in short-term solutions to the problems which beset this country, preferring wherever possible to include the detailed questions in the consideration of the broad implications of a well-co-

ordinated policy". Whatever that means.

He did, however, feel that "The National Enterprise Board's involvement in the development of microcomputer-based hardware... must be encouraged and sustained," asserting that "We are convinced of the validity of the proposals to establish Inmos; and Liberals believe that having started along this path, we should follow it with determination."

All of which leaves us precisely where? As far as this writer is concerned, with the feeling that the major political parties have all adopted a pre-occupation with microelectronics as a substitute for constructive thought about the nature of the computer industry and the emergence of an "information society" — in much the same way that a pre-occupation with ICL has inhibited a wider appreciation of the significance of computers, in the past.

It is true that all three of our party spokesmen do touch on other matters. Jim Callaghan sees the lack of skilled manpower as a constraint on the rate at which technology is applied. Ian Lloyd wishes to end the complete monopoly which the

Intel picks UK Cobol compiler

graduates receive computer training so that there is a constant flow of competent people into a business which is desperately short of suitable staff?

All these questions, and many more, would be answered, if not solved, by a comprehensive policy for computing in the UK. Regrettably none of the political parties appears to have such a policy.

The two major parties still see computing as a field in which they can score political points off each other. Fortunately, some of the higher ideologies such as the inclusion of ICL on a list of industries to be nationalised, appear to have been dropped by the Labour Party, but the Conservatives can still assert that "once the NEB has launched a successful project we will require it to sell it off to free enterprise". What price an ICL or a Ferranti in US, Germany or Japanese hands?

This doctrinaire approach has no place in a mixed economy and that, regardless of which party is in power in today's election, is what the UK will remain.

Microelectronics is important and the efforts of the government under Jim Callaghan to promote this aspect of computer technology and its application throughout British industry, are to be commended.

But it is not the whole story. What, for example, should be done about other sectors of the computer industry such as mainframes, minicomputers and peripherals? How are we to counter the adverse balance of trade which is of increasing concern in the computer business? What can be done to improve the availability of risk capital for innovation in the computer field? What should we be doing to prepare our schoolchildren — the citizens and voters of the future — for a computer-based society? What can we do now to ensure that the more able school-leavers and

Philips to offer viewdata terminals for £50 more than a colour TV set

VIEWDATA terminals for only £50 more than the price of a colour television set will be available from Philips one year from now, according to Dr Richard Horsnell, managing director of Philips Data Systems, which launched its range of private viewdata systems last week (CW, April 28).

A.B. Dick and Dataproducts in ink-jet printer link-up

A COLLABORATION on research and development into ink jet printers for computer-based applications is under way between A. B. Dick of Chicago and Dataproducts of California. Dick is the big office equipment manufacturer recently acquired by GEC and now headed by Geoff Cross (CW, April 19) and Dataproducts is one of the world's largest manufacturers of OEM line printers.

The technology used in IBM's 6940 ink-jet printer is licensed from A. B. Dick, but the devices now produced by the latter are used primarily in packaging applications such as marking cans, and for addressing publications for mailing during the actual printing process.

NEB's £8m for disc firm

From front page

ding Huda and Data Recording Equipment. The new disc company will take over all existing cartridge and floppy disc manufacturing operations handled by DRE.

The main new product type to come out of the new disc company could be fixed disc drives. MPI already has considerable experience with fixed disc technology and has been selling its MiniModule 9730 family of sealed module drives since early last year.

DRI already sells the 3300 series of fixed disc drives built in California by Okidata, and was originally intending to build them under licence (CW, February 10, 1977). A DRI spokesman declined to say whether the deal with MPI would affect the agreement with Okidata.

Univac takes Siemens' laser printer

NEGOTIATIONS are under way between Univac and Siemens which are likely to lead to another coup for the German company's ND-2 laser printer. Univac plans to add the printer to its catalogue for use with both 1100 and 90-series mainframes, and will be the fourth major company to do so after ICL, Fujitsu and ICL.

In Japan, Mitsubishi is also understood to want to take the Siemens printer, which remains the only effective competitor for IBM's 3800 laser printer. Both print at speeds between 10,000 and 20,000 lpm on fan-fold paper.

International software directory to be published

AN international directory of software is currently under preparation by the publishers of the Computer Users' Year Book. It is expected to contain descriptions of over 4,000 software items developed all over the world. The products will be classified under 100 separate categories, and extensive indexing will be provided.

The directory will be marketed throughout the world. The price in the UK will be £35, though for those who book their copy before publication, a discount of £8 will be offered. Overseas prices have not yet been decided, but they will be higher to cover the cost of shipping and distribution.

UK software houses are receiving invitations to submit entries, and any that have not been contacted but feel they have products suitable for inclusion are invited to contact the Bournemouth-based company. Only independently marketed software will be included.

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IBM opens computing store in Rotterdam

WITH 48 retail stores in the US, IBM's General Systems Division has introduced the concept to Europe, opening a Business Computing Centre in Rotterdam. It already has similar stores in Germany, Italy and Spain.

The sole product on offer in the store is the IBM 5110 compact but powerful desk-top computer — and IBM stresses that customers do not simply walk in and walk out with a 5110 under their arm.

Instead, they place an order in the usual way, and software problems are solved in one of three ways: with country-generated programs, which IBM programs written to meet local market requirements; with a list of competent software houses capable of writing a suite to the customer's requirements; or, for experienced users, by writing it themselves.

Customers may walk in off the street, but in general enter at the invitation of their local GSD salesman. Customers are invited to try out the 5110 and get the feel of the machine, and full-scale briefings are given every Tuesday.

NCR to manufacture supermarket scanning devices

THE use of the Universal Product Code and laser scanning equipment to read it is now so widespread in US supermarkets that NCR has announced its intention of manufacturing the scanning unit itself.

Hitherto, NCR has bought all its units from Spectra-Physics of Mountainview, California. It has now increased its order rate, and also intends to buy optical modules from the company and assemble them into complete units at its Cambridge, Ohio plant.

Ultimately NCR intends to do full manufacture in-house, taking a licence for the technology from Spectra-Physics. NCR scanning systems are now installed in 224 supermarkets, four times as many as a year ago.

Thomson memories for Amdahl

EIGHTEEN months of talks between Amdahl Corp and the Citec subsidiary of the French Thomson group have culminated in a three-year agreement under which Thomson will manufacture memories for Amdahl's Irish-built computers and will gain access to the US market, via Amdahl, for its multi-layer circuit board technology (CW, January 5, 1978).

The memories will be manufactured at Citec's Toulouse factory, which was inherited from the former CII with considerable French government assistance after CII was merged with Honeywell-Bull.


The French government will welcome the agreement with Amdahl, since it will help it to fulfil its commitment to maintain employment at Toulouse.

GA headquarters

A NEW UK sales, service and administrative headquarters has been opened by General Automation at 43-45 Windsor Road, Slough. Tel: Slough 72331. The UK manufacturing facility remains at Burgess Hill, Sussex.

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1984 and all that...

THIS week's contribution to our column of the strange things said in the media about computers, was sent in by E. W. Tocher, of Stow-on-the-Wold, who wins £5.

This Post Office promotion is PRESTEL (previously known as VIEWDATA) where everyone's television set is turned into a computer terminal — with all the information you may require at the touch of a switch.

The service starts in the spring and all the information processing industry will be watching the public's acceptance of Big Brother in their living rooms.

Ten years ago...

COMPUTER WEEKLY
May 1, 1969

A FOURTH US anti-trust suit was brought against IBM, by Applied Data Research, claiming that IBM's activities had "retarded the growth of independent software".

A small "airborne" computer, designed for use in aeroplanes and ships, was announced by IBM.

The UK computer boom had continued in 1968 with total deliveries of British-made and imported hardware up 30% to £106.3 million. Burroughs' sales had rocketed, with E6000s reaching 50% of the previous whole year's total, and E4000s 35%, in only the first three months of 1968.

The French government blocked a deal which would have given Lescage the chance of acquiring more than 50% of Metra.

The CAD Committee had been going strong since its setting up in 1967, and four of its 10 proposals had been adopted by Mincat.

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Data structures key to program design

Whom terminals hath joined...

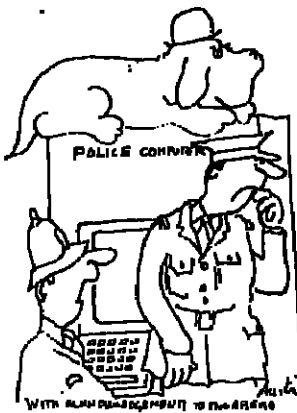
IT had to happen eventually. I suppose. An American couple has met and got engaged entirely by terminal network. A firm called Florafax has a network for sending orders for flowers around the country. And Brian Barber, a florist in Las Vegas (where else?), was seeking some information via his terminal from a customer service representative, Linda Crider, in Tulsa, Oklahoma, when he started chatting her up electronically over 1,100 miles.

They met for the wedding, in Las Vegas, but insisted that the ceremony be performed twice: once normally and once by wire, by a minister in Kentucky who has a side-line as a florist and thus also has a terminal. This reverend gentleman, Mercer McKinney of the Universal Life Church, is an old hand at officiating at bizarre weddings, having performed on a rooftop, on a diving board, and in a helicopter at 10,000 feet. (You think I'm making all this up, don't you? I've seen the pictures!)

The cost-effectiveness of data processing is amply demonstrated by the fact that while the church ceremony took 30 minutes, the computer ceremony only lasted 25.

I trust the flower company presented the happy couple with plenty of samples of its product — daisy chains made up to look like coaxial cable, and so forth. On the other hand, it might present them with a large bill for the communications costs. There's lots of money to be made out of playing Cupid these days.

OVERHEARD in a computer centre in Derby, a cleaning lady stating with great pride: "My daughter's a computer!"



"Okay, so you heard a government watchdog bark!"

Real-Time Program Design (RTP)

Systems Analysis

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THE 10-part series on relational database which ran from October last year to January, set off considerable interest and a flood of correspondence. The aim of the series was to combine three cognate but separate topics under the umbrella of a catch-phrase title.

These topics were: "Logical" system design; Fundamentals of relational database theory; and Implementation of relational ideas in conventional file systems and in hierarchical, Codasyl set-structure and relational database management systems.

The subject that provoked most correspondence was, however, none of these, and appeared in the very last article as a parting shot. It was the combined use of relational design and Jackson-type structured programming as a thorough-going system and program design methodology.

In this article I want to look at problems which occur as a consequence of conventional system design concepts, and ways of overcoming these problems by focusing upon the structure of the data processed by these systems rather than upon the nuts and bolts of implementation.

No DP manager needs to be told that systems never stand still. There are (at least) two major causes.

1. Alterations in end-user requirements, changes in government legislation, salary scale restructuring, and a hundred-and-one other organisation-dependent changes.
2. New hardware and

naturally; they are the relational database normal forms.

Whether we construct relationship diagrams for all data items (which is a formidable task for a large system although good discipline) or draw up conventional record layout sheets and check them for Fourth Normal Form, the end product should be the same. Crudely, each field in a file depends upon the key, the whole key and nothing but the key.

However, since the files must be implemented at some stage, the record types may now be combined to give a more efficient result. One record type may be moved as a repeating group into another record type, or it may appear as a lower level segment in an IMS database. What we don't do is to split up the fields of a record type.

Each record type created in this way is logically "clean" and, ideally, the structure of files as implemented (with repeating groups and so on) is also "clean". If they are constructed around the inter-file relationship diagram, which simply shows the natural relationships between the keys of each record type.

We now have a logical data structure for input data. A

similar logical structure exists for output data; a report for example may have a hierarchic structure of heading and detail lines with some additional printer carriage control information. We now have to construct a program or series of programs to bridge the gap between input and output data structures.

A program specification is little more than a collection of input and output data structures with processing information which describes how a particular level in an output structure is formed from the corresponding level in the input structure. If, for example, I wish to produce a report in employee name order from a personnel file whose records are also held in employee name order, the program merely has to take each record on the personnel file and transcribe it (in the same order) to the report.

Life is rarely quite this simple, however. If the personnel file holds for each employee the name of department he works in, a program which produces a report of employees in departmental order may be much more difficult to write.

We applied Fourth Normal Form rules to files to clean up their logical structure. Can we do the same for programs? We clearly need some techniques to recognise and handle 'clashes' in structure between input and output data structures.

Fortunately Mike Jackson has recently provided the answer. If our bridge between input and output involves a structure clash of one type or another we may well have to create intermediate data structures and one or more extra programs.

Every reader is familiar with the use of a "sort" to alter an input record sequence to give the required sequence of detail lines on a report. But there are other types of structure clash and different ways of dealing with them, and readers who wish to pursue the matter further should consult Jackson's excellent book.

Each program specification

● Turn to page 20

By Max Stewart

Analysts and programmers may not after all be thrown on the scrapheap by the wholesale introduction of microprocessors. Max Stewart, author of CW's recent Relational Database series, argues that systems should be designed around data relationships and not for specific implementations, and that the skills involved are equally machine independent. Stewart is divisional computer service manager for Leyland Vehicles, the commercial vehicle wing of BL.

But wasn't the computer supposed to be there as a tool, a means to an end? Shouldn't the facilities available be moulded around the system and not the other way about?

The tail was (and all too often still is) wagging the dog. A "system" is the computer-aided bridge between source data items on one hand and the end-user's reports, VDU panels, paylips or whatever on the other.

The way in which the first two stages of analysis — specifying an end-user's requirements and deciding where the input data is to come from — are performed is not relevant to our purposes.

The two further main design phases — system and program design, and file design — have each been the subject of much study since 1970, and a single unifying concept has arisen: design the system around the structure of the data it processes.

Reports and VDU panels clearly have a structure which is (or should be) independent of the computer system used to create them. Less obviously, source data also shows natural clustering; for example my age, height and sex have a strong affinity with the employee number which uniquely describes me on a personnel file.

File design should take this clustering into account. Imagine a collection of files built up in such a way that each file has a single record type, and the data items (fields) which constitute each record type are clustered naturally.

These files have a number of advantages over files which are constructed according to how they are to be implemented, the most important of which is that they are inherently stable; we may add extra fields to a record type but it is very much less likely that we will move a field from one record type to another because we are making clustering — the inherent relationships between data items — work for us.

We have already found simple (and for the most part, they are simple) rules for checking that the data items which constitute a record type are clustered

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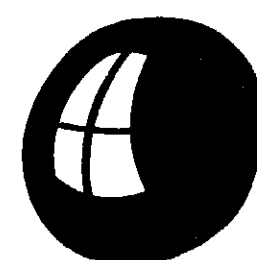
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The first Intel Fair was held in 1976 and it has grown in size and stature every year to become one of the most significant events in the diary of the microcomputer engineer and project manager. Intel Fair '79 will be no exception to this rule offering, as it does, four simultaneous seminars, an exhibition and a video demonstration room.

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microcomputer, the first I/O controller which enables mainframe peripheral handling techniques to be applied to microcomputers, and a new COBOL compiler.

Many of the seminar papers will cover applications, and there will be special presentations for the Process Control and Data Processing engineers in addition to a series of papers for newcomers to microcomputers.

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papers at the seminars and will be demonstrating their products at the exhibition. This provides an excellent opportunity to discuss the experiences they had in bringing their products to the market place.

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MICHIE'S PRIVATEVIEW

Prospects of a commercial explosion in 'expert systems'

WHAT price a computer program to discuss intelligently where and when to drill for uranium? Answer: about \$10 in CPU time per consultation.

Things like this system, developed by SRI International (CW, April 19), and prospects of a commercial explosion in micro-based "expert systems", have stimulated a number of readers' queries. I found the following particularly interesting:

1. Are expert systems applicable at all to commercial databases, which are often very large but relatively simple in structure?
2. If so, what sorts of data structures should be used now to build databases so that the best use can be made of expert systems when the time comes?
3. Will expert systems find their first business applications in improving the efficiency or effectiveness of data processing, or will they replace the judgment of managers? And if the latter, then of which managers?

Let me here expand on the answers I gave:

Question 1. This depends on whether the client's demands include facilities for inferential retrieval. If so, the answer is YES. **Question 2.** Relationally structured databases are the most relevant. As a possible tool for databases designed with "expert system" extensions in mind, my Edinburgh colleague Dave Warren has looked at the predicate-logic-based language Prolog, which he described in an earlier Guest Privateview (CW, August 24, 1978).

He will be lecturing on practically relevant aspects of Prolog at the Infotech/AISB Summer Conference at Edinburgh to be held in mid-July. This session will be introduced by J. A. Robinson, a world pioneer of computational logic.

Question 3. Effectiveness of existing data processing will be improved. Among the earliest customers will be companies which at present hire outside consultants and would prefer their own back by acquiring or developing such systems for their own use; also by selling their time as "domain specialists" to others engaged in expert system developments.

Having used the word "inferential" let us not leave it hanging. The following imaginary example is adapted from Winston's text-book "Artificial Intelligence."

A database operated by a large zoo contains facts about the animals, their pet names, their keepers, cages, diets, ages, dates of acquisition, health records, etc., and includes descriptive features ("lays eggs", "swims", "has dark spots" and so on). Also recorded for each is its species — "penguin", "tiger", etc. The manager, however, also insists on being able to have this inferred for him by the system from fragmentary observations.

"This animal", he says, "which seems to have got into my back garden — I don't know what it is, or even whether it belongs in

our collection. Can I dial up the new database and find out?" Presumably he wants something like the following dialogue (MAN = manager, MAC = machine).

MAN: Call taxonomy. MAC: Taxonomy here. Tell me some features.

MAN: I don't know. MAC: Is it a carnivore?

MAN: Yes. MAC: Does it eat meat?

MAN: I hope not. MAC: Does it have pointed teeth?

MAN: I don't know. MAC: Does it have claws?

MAN: Why? MAC: I am trying to establish whether it is a carnivore.

MAN: OK. MAC: Does it have hooves?

MAN: Yes. MAC: Does it have very long legs and neck?

MAN: No. MAC: Does it have striped legs?

MAN: Yes. MAC: Then it is an okapi. Want to know which rules got that?

MAN: Yes. MAC: Rule 7, Rule 12A.

The store of taxonomic inference rules for concocting this little dialogue was adapted from pp. 145-147 of Winston. They illustrate the kind of structures (ie, pattern-based rules) which need to be in the database to facilitate this sort of retrieval. Writing "A" for "animal", the two successful rules were:

Rule 7 — If A is a mammal and has hooves then A is an ungulate.

Rule 12A — If A is an ungulate and has a tawny colour and has striped legs then it is an okapi.

Three other rules were invoked during the process of eliminating the hypothesis plus one more to eliminate "giraffe."

As new knowledge or new kinds of animals come to hand and as system gaps are revealed, further rules are added incrementally. Naturally such a system can have its zoological rules replaced with similarly structured facts about cars and their makes, rare stamps, medical data, tax benefits, or anything else.

Donald Michie

¹For AISB members there are 40 places which will be disposed of on a first come first served basis. Those interested should contact Penni Edinburgh EH8 9NW. Tel 031-887 1011, Ext 6893.

²P. H. Winston (1977). Artificial Intelligence. Reading, Mass. Addison Wesley Publishing Co.

PROGRAMMER NOTES

Software generator service now in UK

FOLLOWING our discussion of the Systematics' Cobol generator (Programmer Notes, April 19), details have come to light of a more comprehensive program suite generator that has been in commercial use in the US for a number of years.

Developed by a small Californian software house, Genasys Systems Inc, it has been used by them to complete some 200 application systems for customers. The company has just begun to offer a similar service in the UK.

Genasys began work on its generator software in the early 70s, based on the recognition that up to 70% of the work it was doing on new application systems was purely repetitive. It therefore set out to develop a productivity tool capable at least of generating the core of an application system.

The software it now uses is capable of generating complete source programs both in Cobol and PL/I, for either batch or online applications, and takes as its input high-level systems specifications in parameter form.

The software itself consists of around 500 macros written in IBM assembler and, while it can only be run on IBM mainframes, the code generated can be compiled on a wide variety of equipment.

Simple parameters determine which Cobol standard is to be observed by the generator, the range supported including Ansi and the IBM D, E, and F compilers. The package in addition supports most major access methods, including VSAM, and

offers interfaces to DL/I, Total, and Adabas.

As in the US, Genasys in the UK will use the software primarily to produce application systems for clients. It prefers to get involved after a functional specification has been produced, subsequently building a full specification with the help of the software.

The programs subsequently generated are accompanied by documentation created automatically from the same high-level, machine-held specifications. When installed and tested, the programs are generally maintained by the customer's own programming staff, with the help of the documentation.

A small firm with just 17 professional staff, Genasys is reluctant to enter the software products marketing business. Instead it appears content to enjoy the considerable commercial advantages the generator offers: using it, the company is able to quote development timescales and costs well below those of conventional software houses.

However, it has sold the software as a package twice for in-house use, in both cases to major international companies. It was to support one of these, a major oil company, that it initially opened its London office.

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OP SPOT

By Bernard Allen

The IDPM is popular with ops, says Cluff



Ted Cluff

THE telephones at the Institute of Data Processing Management's Covent Garden office hardly ever stop ringing these days with calls from persons wishing to learn more about the organisation.

And of the 70 to 80 new members the IDPM has recruited every month so far this year, a "considerable number" have an operations background, according to secretary-general, Ted Cluff.

"It's difficult to give an exact figure at this moment, but I would say that about one in five of our new members have operations experience," said Cluff.

Although many of them are no longer directly involved in operations — some have moved on to become DP managers, in fact — technical staff, chief operators, and operations managers are included.

Said Cluff, "Yes, it's true that many of them no longer work in the operations department, but to me that's a good sign — it shows that operators can make careers for themselves."

Cluff hopes that the new members, particularly those at chief operator and operations manager levels, will encourage operators to attend IDPM meetings.

The address of the IDPM is 51/54 Goschen Buildings, 12/13 Henrietta Street, London WC2E

Training can't simply be 'picked up' while working

WHEN you consider the many functions and responsibilities of the operator, the level and amount of training given to him often seems inadequate.

At too many installations, from the time he joins the company as a trainee, he is expected to pick up the "tricks of the trade" with a minimum of help and guidance.

If he is lucky, he will find a good natured senior colleague who is willing and able to explain the workings of system and department to him.

If he's not so lucky, and as a result makes a lot of mistakes, there is every possibility that his progress reports will be littered with remarks like "slow to learn" or "uninterested in the work", and he will have to wait a considerable time before being made up to operator grade.

So what does he need to learn

if he is to become a competent operator?

Quite obviously, he needs to know about system hardware and software, and the main applications run at the installation.

Courses on hardware and software are fine, and the trainee should be sent on them at the right stage in his development to add to his knowledge of the system and clear up any misconceptions he might have about it.

Such courses are valuable in that they will, for example, give him a deeper understanding of the operator system commands and he will discover that they can be used in ways different from the accepted norm at his site.

But to be a useful member of the operations department he must know how to apply his

knowledge of the system and applications in order to provide the best possible service for the user.

With that end in mind, most of his training must take place "hands-on", in the computer room.

For the raw recruit, the computer room is a confusing, seemingly chaotic place — there seems little form or order to it all as the operators mount tapes, type commands at the console, and carry stationery from the storeroom, and load it on the printers.

So what do you do with the trainee?

Start him off on the card readers or printers, under the supervision of an operator or senior operator — that's what.

Ideally, his supervisor should be a person interested in training, and capable of explaining the workings of the system in a clear and simple manner, with as little jargon as possible.

And as soon as the trainee is competent at loading the printers and feeding cards to the reader, he should be encouraged to use the operator commands related to those devices. This will give him a basic understanding of how to control devices by means of the operating system.

From the early stages, the trainee should be encouraged to make notes — the blank side of punch cards are ideal for recording information about operator commands, for instance — and ask questions about the work.

After a period on the printers, he might be introduced to the delights of the disc and tape units. Again he should be allowed to use the commands relating to those devices.

Next, two or three weeks at the main console, watching the senior operator run the system,

would not go amiss. There he will see how the operator "drives" the system, and also learn a bit about the major applications of the site.

After another two or three weeks tending the peripherals, the trainee should be sent on a course relating to the basics of the hardware or software, or both.

Later on, after he has gained further practical experience, it might be a good idea for him to work in the job control section for a short time to learn more about the applications run at the site.

If he follows this sort of training programme and also learns about such matters as error recovery, loop tracing and system wait states he should, all other things being equal, make a fair operator after some nine months to a year at the installation.

Operator training is an extremely important subject, and one which is given far too little attention at many sites in the industry. At some installations, however, the operators are treated well in this regard and even get to work in user departments in order to gain a better understanding of the problems they face.

I would like to hear your views on this.

Back to the Middle East

Granville Mills, who resigned as Data Centre Manager at the Tehran site of Iran Air because of the political unrest which existed in that part of the world (Op Spot, March 18), has moved back to the Middle East. He is now DP manager at an installation in Dubai, in the Persian Gulf.

Report from Auerbach points up operational causes of data loss

"ALTHOUGH statistics are hard to find, it is safe to assume that the unintended 'scratches' are a prime cause of data loss on tape files.

"Because some shops still use unlabelled tapes, they depend on the operator to label, file, pull and mount the tapes properly. As a result, when correct actions are not taken, valid data tapes often become scratch tapes," according to a portfolio published by Auerbach.

Call File Retention and Back-up, it is one of the latest additions to Data Centre Operations Management*, and points out the ways in which data stored on magnetic media is sometimes destroyed, stressing the need for attention here.

According to the report, internal tape labels do afford some protection to the data, but are by no means fail, or error, safe.

Most operating systems have a facility which enables a retention date or period to be recorded on the label, but it tends to be seldom used.

And even when it is used, many operating systems will allow the operator to ignore the warning message, in the event of the date still being valid, and overwrite the tape.

Data may also be destroyed as a result of the wrong edition of a file being used. The report cites a

case in which an operator, either ignoring or failing to notice the warning message issued by the system, used the "father" instead of the "son" version of a file in an accounts update.

The error was not discovered until several weeks later — after all the records which could have been used to rectify the mistake had been erased.

Pointing to other operational causes of data loss, the report mentions hardware malfunctions, software and program errors, and further human errors.

"Tape reels and disc packs are delicate. If someone grabs an unprotected tape reel by the outer edge rather than the hub, the tape can be crimped to the point where it is unreadable."

*Data Centre Operations Management. £120, including monthly rental. Available from Heydon & Sons Ltd, Spectrum House, Millview Gardens, London NW4. Tel: 01-203 5171.

£5 hints

SEND me your hints relating to the operations environment and I will award £5 for each one published in this column. Please include the name and address of your company, and a telephone number on which you can be contacted during the daytime.

Logabax offers faster printer range for IBM 3270 users

USERS of the IBM 3270 are now offered faster and cheaper alternatives to the IBM 3284/0/8 hard copy printers by Logabax. The Logabax units are based on the LX 180 serial printer, one of the most successful OEM products manufactured in Europe.

Logabax has added an interface to the LX 180 that enables it to be used with any 3270 cluster either local or remote. Logabax believes that there are about 2,000 users of the 3270 in the UK alone. The Logabax replacement for the 3284 costs £2,000 and runs at 180 cps, compared with 40 cps for the 3274. Users of the 3288 are offered a Logabax alternative which costs £2,700, while the 3288 compatible Logabax printer is priced at £3,750 and runs at 140 lpm, compared with the 120 lpm performance of the 3288.

Delivery times of no more than two months are quoted, but Logabax is not prepared to offer rental. Asked why it had not moved into the IBM compatible printer business before now, Logabax said that it had

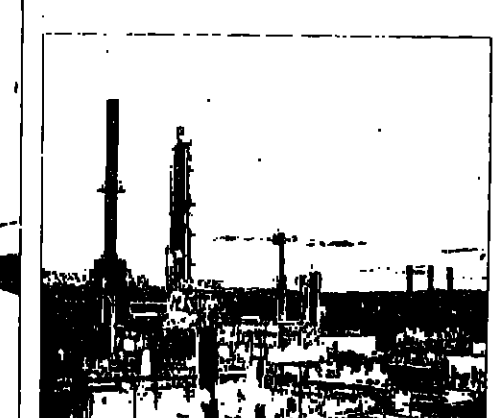
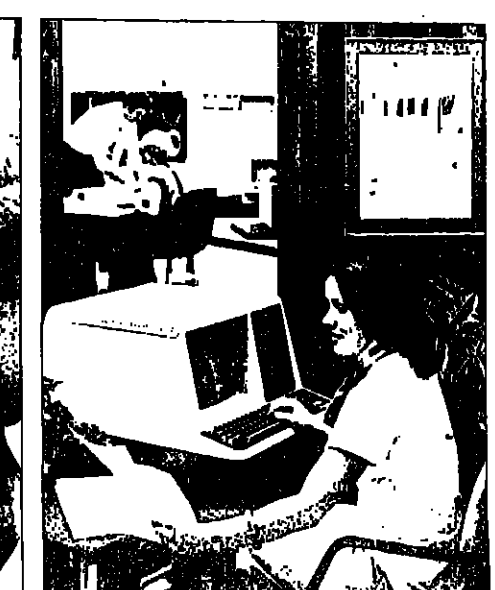
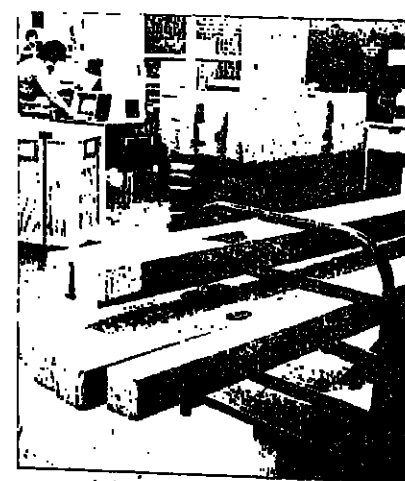
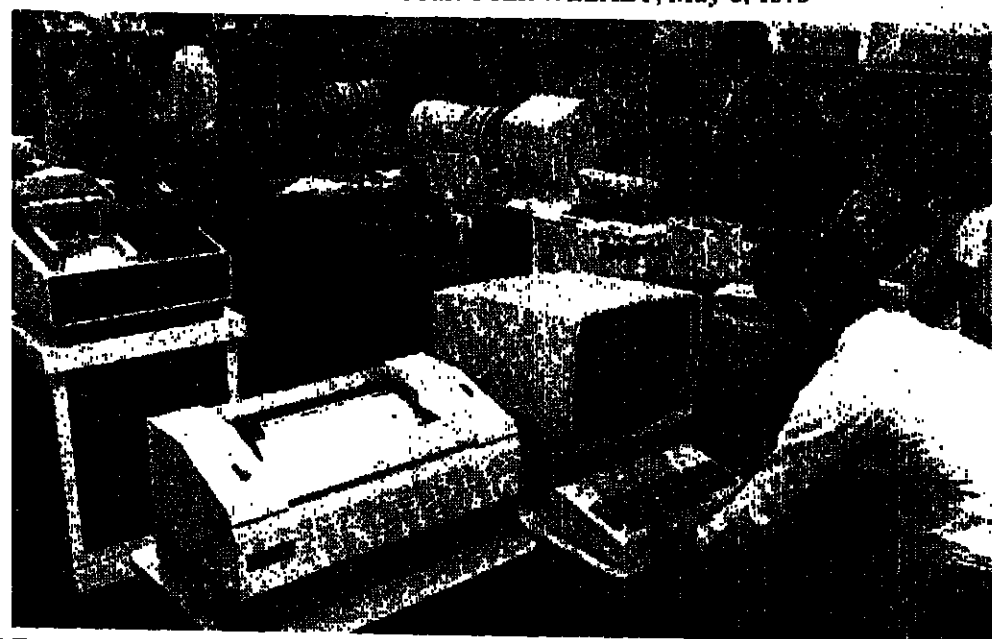
waited until its sales and field engineering operation had grown big enough to provide IBM users with the level of support they expected.

Unlike some of the other leading printer OEMs, Logabax also has a substantial end user side to its business with its family of commercial computer systems that range from desk top units costing a few thousand pounds to multi-terminal configurations in the £50,000 plus price bracket.

End user systems now account for about two thirds of the company's UK turnover which came to £2.4 million last year compared with £1.2 million in 1977. Logabax is aiming for £5 million this year.

The LX 180 is built by the Logabax parent company in France and is also manufactured under licence in the US by Computer Peripherals Inc, the joint CDC/NCR/ICL company.

The photograph shows the first IBM user to interface a Logabax printer with its 3270 kit. Western Geophysical of Ixworth, Middlesex.



Distributed Processing Control it... with DECnet.

Distributed processing is a reality.

The economies of scale have dramatically shifted from centralised batch-oriented machines to distributed, interactive processing and networks.

Many companies already have hundreds of distributed computers in laboratories, in warehouses, in sales offices, on the production lines. Digital Equipment alone has installed more than 140,000 of them.

One question remains: how to acquire

and exercise control of data. For is it reasonable to permit such autonomy that data remains unshared? Is it reasonable to permit such independence that all information is isolated, and then duplicated elsewhere, again and again?

Control is important, and DECnet is the best way to gain control and exercise it. DECnet is Digital Equipment's networking software. It permits communication among all Digital Equipment computer families using virtually any Digital Equipment operating system. And through Digital Equipment's

family of protocol emulators, you can tie non-Digital Equipment computers — including large mainframes — into your network. That network may be configured in a range of topologies — hierarchical, ring, star — matching controls to your management or organisational style and needs.

If you'd like to learn more so you can develop a strategy for controlling your distributed computers as you see fit, fill out the coupon. Talk to the company that started the trend to distributed processing.

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A computer weekly handbook

BASIC FILE DESIGN

By OWEN HANSON

This book provides a brief but authoritative review of the most frequently used file organisation techniques, and of related subjects such as data security and software aids.

The file designer is shown how to choose between the available techniques on the basis of known or forecast information rather than rule-of-thumb, and methods of ensuring that the correct choice has been made are given.

New work carried out by the systems analysis division of the City University Business School, London, is linked with previously published information to provide methods of optimising the performance of sequential, direct and indexed files. Marked improvements can be achieved, particularly with direct files, which are worthy of wider use than at present.

Students of data processing, lecturers and practitioners should all find the book invaluable, particularly because it provides a great deal of information and many illustrations in a very compact format.

£1.50 including postage
Rates for bulk orders on request

Available from:

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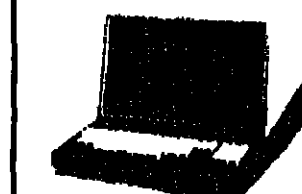
PEOPLE AND EVENTS

By Judith Morris

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- Block Transmission from Screen by Line or Page
- Green Phosphor Non-glare screen



Models 7001-7002

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- Teletype Compatible
- Hard Copy Printer Output
- Selectable Half or Full Duplex
- Video Output for External Monitors
- Green Phosphor Non-glare screen



Model 7000

- Teletype Compatible
- 24 Lines of 80 Characters per line
- Selectable Baud Rates from 50 to 19,200 Baud
- CCITT V24 Interface
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Harvey for Barclays

Mercantile Credit, the finance house subsidiary of Barclays Bank, announces the appointment of Derek Harvey as its deputy general manager. He will have responsibility for the future development of the company's computer systems. For the past four years, Harvey has been design manager for the Talsman system which operates at the Stock Exchange. He has also worked for GEC and Atlantic Container Line.

Pat Daniels has joined BOSS, Brown's Operating Systems Services, as a software consultant. He will specialise in telecommunications development. His former position was with Unicom where he worked on the design of an advanced online order entry system linking chemists shops to a central computer facility.

Ian Muir, a former regional director of Adler Business Systems, has been recruited by DML Computers as the manager of a sales and software team which is to market Xerox Diablo minis. The company, which operates in Scotland and North East England, has also appointed Philip Bliss to run an independent computer personnel services section of DML. He was previously manager of ATA Computer Recruitment.

Colin Barker has been appointed group general manager of the consumer electronics appliances group of ITC Europe. He was formerly with STC as director of marine and submarine systems.

Liveness Saga
by Dan

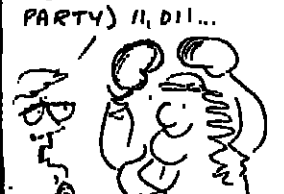
AS RETURNING OFFICER FOR THIS CONSTITUENCY I DECLARE THE VOTES CAST WERE AS FOLLOWS...



...J. CALIGARI CHIPS WITH EVERYTHING PARTY!! DID...



...BELLA BRIGANTORUM (PUNK GIRL RULES OK PARTY)!! DID...



...AND THAT BRITAIN HAS DONE IT AGAIN!!



Ritmeester on ICL board

ICL has announced the appointment of Dr Joseph A. Ritmeester van de Kamp as a non-executive director on the holding company board. He is a former president of the Netherlands Institute of Directors, and is at present chairman of the supervisory boards of three Dutch companies. His career includes the position of general manager of IBM Nederland and managing director of KLM Royal Dutch Airlines.

John Shepherd has been appointed by Lowndes-Jax Computer Service as manager for the Ford Operating Cost Analysis System (Focas). He was previously a systems consultant with Ibuscon/AIC Management Consultants.

Alan Glover and Harold Gilmour have been appointed as directors of Grand Metropolitan Systems. Glover, who used to be the company's systems manager with Bide Eye Foods, has joined GMS as marketing and development director. Gilmour has become the consultancy director. He has held senior management services posts with the Grand Metropolitan group for several years.



Tony Whiteley has joined Quest Automation as UK sales manager. Prior to this appointment, he held a similar position with Plessey Microsystems. In his new post he will be responsible for the company's range of automated draughting equipment. Whiteley succeeds Ian Williamson, who now takes over responsibilities for Western Europe.

Graham Robinson has joined Shade Computer Services as a software consultant. He was formerly with SPL as a project leader, and with DEC as a software support specialist.

Peter Champion, formerly a hardware specialist/deputy manager with Rediffon Computers, has been appointed manager of the technical information organisation.

DIARY

MAY 8
Visit BCS Harlow branch. Bye shop. Ganta Hill, 19.30. Contact Steve Robbins, Epping 72448

MAY 8-9
IBM CUA Series/1 group. Holiday Inn, Leicester, 14.00

Semi automatic synthesis of complex pattern descriptions in chess. Prof. D. Michie. Image Analysis group, Oxford University. Nuclear Physics Lecture theatre, Keele Road, Oxford, 18.30

AGM. BCS Preston branch. Royal Oak Hotel, Riley Green, Houghton, 19.30

AGM. BCS Sussex branch. Micro-processor and electronic games. Wine and cheese. Brighton Polytechnic, Brighton, 19.30

AGM followed by qualifications and entry to DP. G. Penney. BCS Manchester branch. Manchester business school, Manchester, 18.30

AGM. BCS Teesside and district. Teeside Polytechnic, Middlesbrough, 19.00

AGM. BCS Edinburgh branch. Mountbatten building of Heriot-Watt University. Grahammarket, Edinburgh, 17.30

AGM and chairman's lecture. BCS Belfast branch. Wellington Park Hotel, Belfast, 20.00

MAY 9
Software aspects of system reliability and fault tolerance. Colloquium. IEE, Savoy Place, London WC2, 19.30

MAY 10
Hardware aspects of system reliability and fault tolerance. Colloquium. IEE, Savoy Place, London WC2, 19.30

The impact of computers on society, and AGM. BCS Kent branch. St George Hotel, Chatham, 19.15

AGM/Program and program language design to increase software reliability. Dr B. A. Wichman. BCS S. Yorks branch. Huddersfield, University of Sheffield, Sheffield, 19.15

MAY 14
Prestel and its social implications. W. Morley. IEE, Savoy Place, London WC2, 18.00

MAY 18
What is a project manager? - seminar. Association of Project Managers, Waldorf Hotel, London, WC2, 10.00. Details APM, 01-799 3162



Testing a Radford terminal at the company's new Bristol office is the Lady Mayor, Councillor C. Ward. Also pictured here are Bernard Aldrich, director of marketing for Rediffon Computers. The new offices are in Queen Square, Bristol, and will serve South West England and South Wales.

Chris Boughton has been promoted to senior systems designer with Arbat (UK), based at the company's research and development centre in Ashford, Kent. He joined the company from Business Computers, where he was a project leader. In his new position he will be responsible for work on the development of Arbat's interactive multi-user system.

Alan Stone has been appointed as manager of site contracts with H. R. Piper, the engineering design company. Before joining the company he was employed in a similar position with another contract design company, and prior to this in marketing with Rhode and Schwarz.

John Lilley has become marketing director for Systematics International. He was previously the UK marketing and economical research manager for Massey Ferguson UK.

Paul Cumberland has become manager of OEM sales with Computer Machinery Company, after four years with Data Recording Equipment where he was manager of international accounts. He has also worked as an area salesman with Fack-Addo.

Roy Martin has become manager of applications software at Apple Computers. Before joining the company he was in market research with Hewlett-Packard.

magnetic media from WILLIS

DATA PROCESSING IN THE BOOING COMPANY. IDPM, West London to Oxford branch. Bull Hotel, Gerrards Cross, Bucks, 20.00

AGM. The Role of Large Computers in the 1980s. Prof. F. H. Sturges. BCS London branch. Fairfield Hotel, Croydon, 18.15

MAY 16-18
Fourth European Congress on Information Systems and Networks. Commission of the European Communities. New Theatre, Luxembourg.

MAY 18
Computer aided software engineering. BCS CAD specialist group. Polytechnic of the South Bank, London, 14.00

Serving the Industry. R. Bulgen. P. Merrick. IDPM Central London branch. Pearl and Dean studio, Broadwick House, Broadwick Street, London W1, 18.00

AGM. BCS specialist group for the disabled. Olivetti Room. BCS HQ, 13 Mansfield Street, London W1, 18.30

A consumer's guide to word processors. ICF. Cafe Royal, London W1, 09.00

The impact of GLP regulations. BCS Information retrieval specialist group. Social Sciences building, Nottingham University, Nottingham, 14.30

MAY 17
Role of large computers in the 1980s. Prof. Frank Sturges. BCS London branch. Waldorf Hotel, London WC2, 18.00

AGM. BCS specialist group. J. Woods. BCS Guildford branch. Cavendish Hotel, Guildford, 19.30

Error estimation in pattern recognition. Dr J. Kittler. Image Analysis group, Oxford University. Nuclear Physics Lecture theatre, Keele Road, Oxford, 18.30

AGM. BCS Coventry branch. Venue to be announced. 19.30

MAY 17-18
IBM CUA Local authorities group. County Hall, Durham, 14.00

MAY 18
Microprocessors - the implications for general management. Southern operational research group. Henley. Administrative Staff College, Henley. Details from Margaret George on 0181 561 165

AGM followed by guest speaker and buffet. BCS Hampshire branch. The Potters Heron Motel, Ampfield, 19.00

Carton backs parachute championship

THE national championships of the British Parachute Association are being sponsored by Carton Industries, who are usually occupied with packaging for the electronics industry. The championships will be held at Netheravon Airfield near Salisbury, from June 14-24

Customers and friends of Carton are invited to the company's caravan which will be on the site throughout the championships. For details of the jumping and latest weather conditions ring 09807 201 ext 144.

ADDS president appointed

Robert Degan has been named as president of ADDS. He has served as executive vice-president for the company for nearly two years, and has also been nominated to the board of directors.

Philippe Lacamp has become a director of Alders, a subsidiary of Alders department stores. He is head of systems for Alders department stores, which is a division of the UDS group.

Alastair Hewitson, who has spent five years as a consultant with John Hoskyns, has been appointed as group data processing manager for Heron. His career has also included the position of computer operations manager with English Electric and data processing manager with International Harvester.

Greg Peck has rejoined Harris Systems as a systems engineer, based at the company's new premises at Hemmelsmith. He was formerly teleprocessing systems engineer with SFR UK.

T. Bruce McCrick has become vice-president of Sert, the society of electronic and radio technicians. He is director of engineering at the BBC.

Anna Tipton has been appointed vice-president of marketing at Advanced Computer Techniques in New York. She was until recently a programmer and is succeeded by Ellen Kishler, who joins ACT from GEC where she was Western regional manager for the company's information services division.

Brian Tytherleigh, managing director of ADP Network Services and president of ADPNS International, has become senior vice-president of ADP.

Ronald Blankney has become vice-president of domestic marketing of Documentation Incorporated. He was previously national sales manager.

NEWS IN BRIEF

Barriers to sharing

A LOOK at the barriers that could slow the effective sharing of computer technology between nations, forms the major part of a talk to be given by Herb Grosch at a British Computer Society specialist group meeting on May 8 at City University, starting at 6pm.

Those interested should turn up at the City University, Senate Room, 5th floor, on May 8 or contact the BCS Specialist Group for Developing Countries, 17 Woodgrange Avenue, London W5.

Replace

BOOK publisher Hodder and Stoughton is to replace its ICL 1901T with an ICL 2850 which will handle all order processing, sales and stock applications, management report production and a subscription system for its medical journal, The Lancet.

VDU addition

FOREIGN character sets are switch selectable as a standard feature on the Regent 20 dumb VDU now available from Terminal Display Systems of Blackburn. The Regent 20 is an addition to the family of VDUs built in the US by Applied Digital Data Systems that TDS sells in the UK.

Conference

THE Fourth International Conference on Computing in the Humanities is to be held at Dartmouth College, New Hampshire, US, from August 19 to 22. It is sponsored by the Association for Literary and Linguistic Computing.

'We were a bit terrified all the way through' says first UK user to convert from DOS to MVS

WITH stories circulating that IBM is planning to phase out its OS/VS1 operating system, existing DOS users are confronted with the prospect of converting their systems to run under MVS in one go. The first company in the UK to take this major step was Overseas Containers Ltd, whose MVS system went completely live in February.

At the time the decision was taken, in early 1977, IBM's plans for OS/VS1 had not become apparent. The move stemmed from the company's wish to expand its teleprocessing network.

This network was designed to allow OCL customers to book, via regional offices throughout the UK and on the Continent, containers or parts of containers that were to be loaded on ships. The IBM 3270 terminals at the offices captured the data and then transmitted it for batch processing twice a day on the computer, a two Megabyte 370/158. The terminals could also be used for a limited range of online inquiries.

The plan was to enhance this network so as to permit online updating of the container file as well as more extensive enquiry facilities. This necessitated the acquisition of more powerful hardware, and the choice lay between a bigger IBM mainframe (either a 168 or the then newly announced 3033), a mainframe from another manufacturer, or a dual

processor system. For a variety of reasons, the choice eventually fell upon a five Megabyte 158-3 MP, and it was this decision which necessitated the conversion to MVS. OCL was not that disturbed by the prospect, as it was anticipating converting to OS in any case.

What this all added up to was three conversions going on at the same time. On the hardware front, there was the change of processor, and also a change from 100 Megabyte 3330 disc drives to 317 Megabyte 3350 drives, plus a switch to 6,250 bpi tape drives.

Then in software terms, a system using DOS under VM and CMS was being changed to a system using MVS TSO. In addition the company was switching from ISAM to VSAM file organisation systems. And while all this was going on, the systems programming team in the background was working on the new teleprocessing network.

And even that was not all. "While we were in the process of conversion," says OCL DP manager Brian Gilham, "we discovered a fourth area. It's a bit vague, but I'd class it generally as environment, covering things like security, back-up, passwords, JCL and so on. It led to a nice clean-up of standards generally."

With naturally enough, no in-house experience of a DOS to MVS conversion, and indeed very little experience of OS among the installation's 250 programming staff, it was an obvious move to get some professional help.

Faced with a choice of independent consultants or IBM, the company chose IBM. The manufacturer in the end provided quite a lot of help, ranging from initial planning, the planning of the new software generation, and guidance in the environmental aspects, all of which was free, to seconding systems engineers to help with the actual conversion, which was charged for.

IBM's first move was a planning exercise, which broke down the existing systems into a number of modules and calculated with reference to previous experience the resources necessary to go through the process of studying the existing documentation, changing the programs, testing them, and then re-documenting. The answer which emerged, 23 man-years, were allocated, and a revised deadline of February 1979 arrived.

One change of mind that did occur midway concerned the ISAM to VSAM conversion. This was originally planned in two stages, from ISAM DOS to VSAM DOS 3330, and then to VSAM MVS 3350. It was found, however, that this was taking up too much system programming time, and so the whole job was done in one go.

For the basic generation of the MVS system, and also for the conversion and testing of the applications programs, OCL made use of computing facilities at IBM's Croydon site. This involved a utility called

turned out to be very close to the actual figure.

To find these 23 man-years meant using contract programmers in a big way. In fact the initial plan was to rely entirely on outside help, but OCL eventually came to the conclusion that it needed some in-house in-depth knowledge of the system, and so used a number of internal staff as well.

The IBM estimate formed the basis for OCL's own planning, and was used as input to the company's network planning program. The initial output was a deadline of September 1979, but this was unsatisfactory, mainly because the throughput had to be there before that date for testing of the new TP network.

Accordingly more resources were allocated, and a revised deadline of February 1979 arrived.

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RSCS (Remote Spooling Communications Subsystem), which allowed the company to key in program changes via VDUs on its own premises, shoot them down the line to Croydon, and get the results back the same way.

This process carried on for about six months. At the end of that time, in mid-1978, the new hardware arrived, and at that stage the work at Croydon was brought back and the rest of the conversion done on the premises.

By November, OCL was ready for a pilot live run on one system, which continued for six weeks. Then there was a period of parallel running, involving the cut-over of all the live files during the course of a weekend. The system's users were not involved in this process; all the checking was done by the computer staff.

Gilham summarised his retrospective view of the whole exercise as "more of a slog than exciting. It wasn't like going through a minefield. We were a bit terrified all the way through, though - at the back of our minds was always this thought of having to do the cut-over all at once. It seemed a bit like stepping off the plank."

And the cost? Excluding the hardware, the resources for putting it in, and any increase in staff costs, OCL reckons it came to about quarter of a million pounds.

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CN 3/79

In-System Emulator enhances Starplex

THE In-System Emulator, ISE, introduced by National Semiconductor at the Hannover Fair two weeks ago (CW, April 26) considerably extends the power of its Starplex microcomputer development system, extending the facilities offered by in-circuit emulation techniques to cover work with different microprocessors, and two micro-based systems developments simultaneously.

impact printer.

National claims that the major benefit of using the ISE system in a Starplex configuration is increased performance. It takes the basic approach of in-circuit emulation — actually running the target system hardware and software under the control of the development system — a stage further, allowing real time emulation.

It also adds the advantage of being able to emulate two microprocessor systems simultaneously.

The ISE unit is equipped with its own 32K bytes of memory, plus a CPU and control firmware, and can run the Starplex cross-assemblers for the 8080, 8048/49/50 and 8070 microprocessors. Emulation of target systems is carried out at full application speed.

It is equipped with 32 breakpoint registers and 128, 48-bit wide cells of program trace memory. Each breakpoint can be masked for "don't care" conditions, and set for desired combinations of address and status from the ISE and the target device.

Nascom gets further into OEM with updated kit

THE introduction by Nascom Microcomputers of the upgraded Nascom 2 computer kit (CW, April 26) moves the company far more strongly into the area of the industrial and commercial OEM systems builder. This has been a conscious decision by the company, following the somewhat

unexpected success of the Nascom 1 kit in this market.

With, according to marketing director Kerr Borland, some 70% of Nascom's European business for the existing Nascom 1 coming from the OEM sector, this addition to the product range is an obvious complement to the company's introduction of sys-

tems building equipment, such as chassis systems (CW, December 21/28, 1978).

Borland states that Nascom is moving more and more into the OEM business, even to the extent of acting as a design consultancy for customers wishing to use standard Nascom parts.

The new Nascom 2 retains the company's allegiance to the Mostek Z80 microprocessor, though it uses the Z80A version which can be run at 4MHz. This offers the potential of a 70% improvement in processor throughput. It employs an expanded, 57-key keyboard that offers several control and graphics functions over the original, and has the standard Nascom interfaces for audio cassette storage, teletype-writer and video monitor or TV.

Additional interfacing is provided by the inclusion of an uncommitted parallel I/O chip giving a total of 16 programmable I/O lines, addressable as 2x8-bit ports.

The new version is also bus-compatible with the existing Nasbus structure, and can therefore be used directly with the expansion systems available with the Nascom 1.

Its major advantage over the earlier model is in software and memory. In addition to a new 2K byte monitor, Nascom 2 is equipped with 8K bytes of user read/write memory, plus a socket for a 64-bit ROM, mask-programmed for a version of the Microsoft 8K byte Basic Interpreter. According to Nascom, the ROM-based on Mostek's MK38000 part — is due to be delivered in July.

Something of an "industry standard", the Microsoft Basic has been marginally modified so that it can be run under all

Nascom monitor software. It can therefore be used with the Nascom 1 as well as the new version.

The new monitor software, known as Nas-Sys 1, considerably extends the capabilities of the Nascom operating system. It allows full screen editing, for example, plus full cursor control. In addition, the cursor is now non-destructive, so it does not erase a character on the screen.

Its keyboard control will support full Ascii upper and lower case character codes.

International forum will discuss the next five years for the industry

ALTHOUGH conferences on the microprocessor are becoming the high growth business of the year, they still provide an important forum for discussion of the application and effect of the device. This month, London plays host to one of the most ambitious, three-day event organised by Infotech on Microelectronics and Data Processing — the Next Five Years.

To be held at the Cavendish Centre, from May 21 to 23, it has been organised as a direct response to discussions with European semiconductor and computer manufacturers, who have felt a growing need for such a forum.

Under the chairmanship of Colin Crook, managing director of Rank Precision Industries, and former group operations manager for Motorola Semiconductor, the conference will attempt to cover the majority of

aspects where microelectronics and the microprocessor will affect the development of data processing techniques.

A total of 13 papers will be presented, with speakers ranging from Alex d'Agapevoff of CAP, Gordon Haley of ICL and Frank Arnold of Nixdorf from the computer industry, through to Robert Helkes of National Semiconductor, Dean Toombs of Texas Instruments and Tomihito Matsumura of Nippon Electric, from the microelectronics industry.

Other speakers will include consultants Malcolm Peltu and Ian Mackintosh.

As well as covering the basic challenge of microelectronics on data processing, the conference aims to explore such topics as the problems of interpreting the future needs of computer architectures; the cost and technology trends of microelectronics in small systems and peripherals; how the micro will change the software business, if at all; the total information technology question of the convergence of computing, telecommunications and office products; and the role of

government in developing microelectronics industry and skills.

On the final day, the conference will be rounded off by a panel session, in which the speakers will be joined by Derek Barber of the National Physical Laboratory and Micro News editor Martin Banks.

Further information can be obtained from Infotech at Nicholson House, Maidenhead, Berks.

Packaged LSI-11

A PACKAGED version of Digital Equipment's LSI-11 microcomputer has been put together by Di-AM Data Systems of Stockport. Known as the Eleven-Pac, it offers an 8-slot backplane in a 5.25 inch chassis that can be used to expand the system to full LSI-11 capabilities. Equipped in its standard form with power supply and 32K bytes of RAM, it also has available several optional cards. Among these are a high speed analogue to digital converter, capable of throughput rates up to 100 kHz.

Expansion at Isher-Wood leads to restructuring

ISHER-WOODS, the Luton-based personal computer store, is expanding its operations, and is changing its name to reflect the changes.

It is understood that the full title of the company is to be changed to Isher-Wood Computer Systems, and that several new divisions are to be set up under this new holding company.

The personal computing efforts will now be handled by a division called Isher-Wood Personal Computer Systems, while developments in other market areas for small systems and equipment, particularly commercial and professional systems, and industrial control sys-

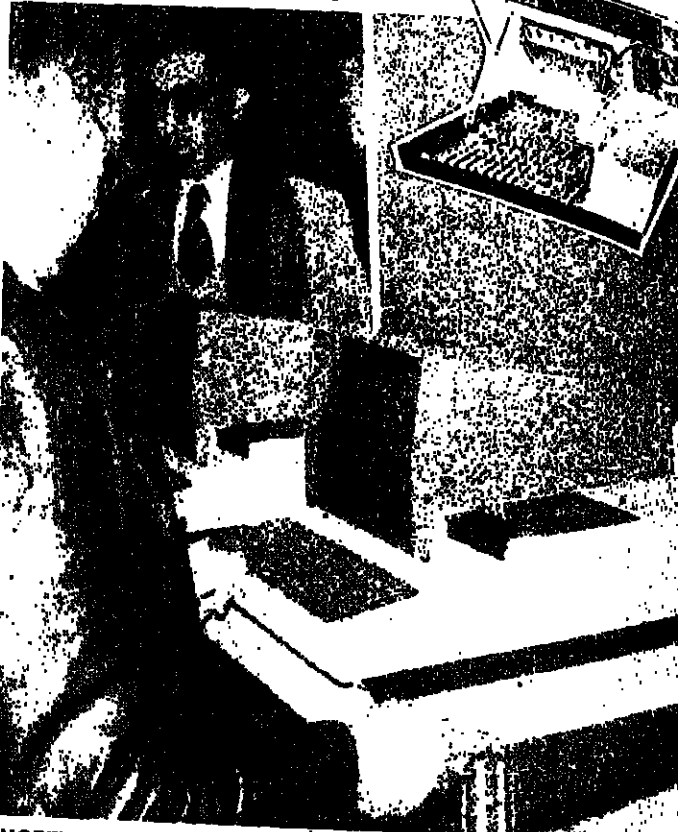
tems, will be handled by two new divisions.

These will be the Management Services Division, which will be offering packages aimed at reducing management workloads, such as Pet and Horizon based critical path analysis packages, and the Industrial Micro-Systems Division. This will probably be headed by a US ex-European director of a minicomputer manufacturer.

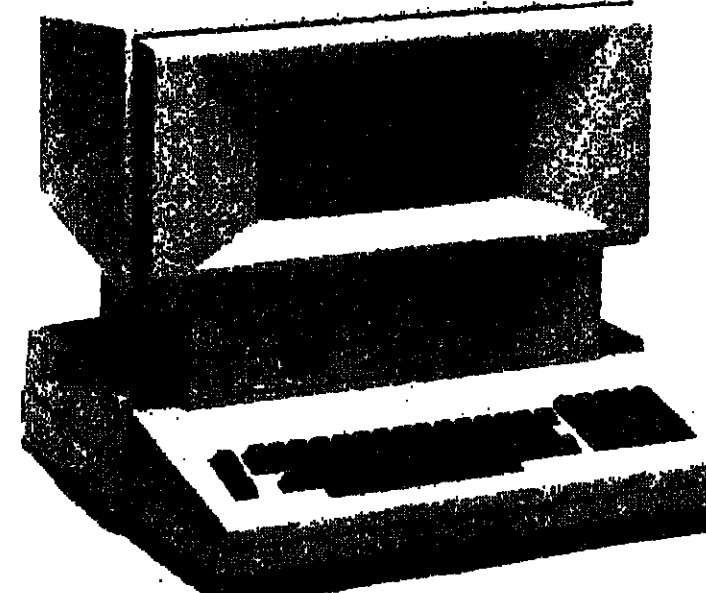
Isher-Wood director Robin Wood could not confirm details of the reorganisation. He did, however, say that the company will be expanding its operations to handle the new range of Pet-based software developed for the Commodore machine.

By Martin Banks

Sharp competitor for Commodore



SHORTLY to be offered in Europe at under £500 is a new Japanese personal computer built around the Z80 chip and programmed in Basic. Seen here on show at the Hannover Fair, the Sharp MZ-50K is extremely small and compact, and looks like a fierce competitor for the Commodore Pet. It includes 4K bytes of ROM and 20K to 48K bytes of RAM, has a 40-character by 25-line display and an integral tape cassette drive. The keyboard has 78 keys, almost all of which offer three different characters or programmable functions.



GEC in the UK will be allowed to build the new Randal 5000 desk top computer, shown above, under license if GEC's new US subsidiary, A.S. Dick, commits itself to buying at least \$11 million worth of the desk top machines for sale to and users in the US (CW, April 26).

The Randal 5000 costs about £12,000 in the US and can run the same Data General Nova compatible applications software that the bigger Randal machines support. Like the bigger Randal systems it is programmable in Business Basic.

The 5000 comes with a 2,000 character display, two mini-floppy disc drives with a total capacity of 400K bytes and between 84K and 128K of RAM. It can interface with a separate printer.

Randal seeks agents for Nova emulator

APPLICATIONS software written for Data General Nova machines can be run on the family of commercial systems from Randal Data Systems of Torrance, California, a firm which is currently seeking European distributors.

The Randal machines are configured around a 16-bit processor constructed from the AMD 2903 bit slice chip family and are microprogrammed to emulate the Data General Nova. Randal itself has developed the systems software, which includes Business Basic and a disc operating system which can handle up to 10 VDUs.

The Randal systems are sold in the US through 80 distributors and compete directly with

the systems manufactured by firms like Basic/Four and Qantel. The Randal 100 and 200 are multi-terminal systems with cartridge disc storage. A desk top machine, the Randal 5000, has just been added to the Randal family at the bottom end.

Randal already has a distributor in the Netherlands, the former Cincinnati Milacron agent, CIML, and the US firm's international marketing manager, Orlando Tonini, will be talking to prospective distributors in other European countries in May and June.

In addition Randal will be demonstrating a system at two US Trade Centre shows — in Paris from June 5 to 8 and in Milan from June 19 to 22.

Codex-CCI agreement

THE unnamed suitor for Computer Communications Inc of Torrance, California (CW, February 22), turns out to have been Codex Corp, the Motorola-owned company specialising in communications equipment.

Agreement has been reached between CCI and Codex under which the latter will buy at least \$25 million of CCI communications processors over the next four years for distribution outside the US.

Codex will also pay CCI \$2.1 million in licensing fees, and receive warrants entitling it to

buy up to 800,000 shares in CCI in 1982; if no other new shares are issued, this would give Codex about 18.5% of CCI. Codex and CCI will collaborate on development of new communications products for sale by both companies.

CSA representative

THE author of the article on software rationalisation, Michael Pickett (CW, April 4), represents the Computing Services Association on the Department of Industry team which is reviewing Steelman languages.

Data General adds Mail slot 'deletion' to its CS range

ADDING to its Commercial System family near the bottom end, Data General has introduced the CS/30, a configuration that comes with up to three terminals, 20 Megabytes on disc and interactive Cobol for less than £20,000.

At the same time Data General has announced additional features for the CS family's Interactive Cobol Operating System, ICOS. They include an interactive screen formatter called Screen, which is intended to save programming time by automatically generating code, and Inquire, a facility which enables the user to browse through Indexed-Sequential Access Method, ISAM, files and update individual records.

Another new ICOS utility is Collapse, which enables the user to condense ISAM index levels for more efficient file retrieval. Collapse complements the existing File Analyser utility, which determines the packing density of files at different levels.

Like the single terminal CS/

20, the CS/30 is configured around the Data General Micronova microcomputer. The CS/30 uses the MP/100 board, introduced earlier this year, which incorporates the enhanced MN802 Micronova chip (CW, March 8).

Further up the CS line the CS/40 machines are based on the Data General Nova 3 minicomputer, and can support up to nine active terminals. The three smaller models of the five in the CS/40 range can now be supplied with up to four 20 Megabyte cartridge disc units, while the disc capacity on the biggest CS/40s can be expanded to 800 Megabytes.

The CS/60 machines at the top end of the CS family are based on the Data General Eclipse processor and can support up to 12 active terminals. The S/130 instruction set lacks the commercial instructions that boost the batch processing capabilities of the bigger C/150 and C/250 business systems. Like the smaller CS systems the CS/60 machines run under ICOS, while the C/150 and C/350 run under AOS.

£35,000 innovation contest

ENTRIES are now being received for the 1979 TDC innovation award, the competition for companies based on new technology. Organised by Technical Development Capital, the award is presented annually for the best business plan which is based on a technological innovation. This year prize-money of £35,000 is being offered.

TDC provides funds for entrepreneurs to help them create or expand businesses which are based on technological innovation, encouraging individuals and small businesses with the necessary expertise. Entries for the award must be received before July 2. Details from Sue Mallett, TDC, 91 Waterloo Road, London, SE1. Tel: 01-928 7822.

Mail slot 'deletion' on request

A SCHEME to enable members of the public to have themselves removed from commercial mailing lists simply on request is being drawn up by the British Direct Marketing Association. Similar schemes, operated voluntarily by trade associations, exist already in the US, and in West Germany.

Announcing this, the chairman of the BDMA, Denis Jarrett, said that the proposed Data Protection legislation regarding direct marketing was "expensive and utterly unnecessary". The extra costs involved posed a serious threat to the future of direct marketing, and to the Post Office which stood to lose revenue because of increased prices to the public.

John Abram of American Express, the chairman of the association's List Committee which has been working on the plans, said they would also help people get onto lists if they wished. "They have had such schemes for years in the States," he said, "and now more people apply to get on lists than to be taken off."

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US court bans transfer of savings

CONFUSION is growing over the future for computerised banking systems in the US following a court ruling that savings and loan institutions (the equivalent of building societies) must stop using remote cash terminals.

The US Court of Appeals in Washington also laid down that banks must not automatically transfer funds from deposit accounts to current accounts when overdrawing takes place, and that "credit unions" must not allow their customers to write share drafts which are in effect cheques.

The federal banking laws in question forbid SPL institutions from providing cheque services, which the commercial bankers' trade association, plaintiffs in the suit, had claimed they were doing by providing cash dispensers.

The law also forbids commercial banks from paying interest on current accounts, which the court ruled that automatic transfers from interest-bearing deposit accounts made them, in effect, current accounts.

The court overturned the earlier decision of the Federal Reserve Board to allow these practices, but said that Congress should make up its mind as to what distinctions it wants between the different types of banks.

Therefore the court's decision is not to take effect until January 1, 1980, in order to give time for legislation.

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Mrs Pat Davies, a receptionist and information assistant at Sutton Borough Council civic offices, makes use of the JCC's online facilities.

Boroughs make 4341 electronic office base

DURING 10th anniversary celebrations last week, the Kingston and Sutton Joint Computer Committee outlined its plans to install an IBM 4341 and to use this as a base for introducing the "electronic office" concept into the two boroughs.

Presently using an IBM 370/148, the JCC has decided to replace this with the IBM 4341 in 1980. It is one of the first local authorities in the UK to do so.

Word processing, facsimile transmission and archival retrieval of documents such as the minutes of committee meetings are applications being considered, and these will be introduced first by Kingston, which has tendered for a private digital telephone system to be installed by early 1981.

The three companies involved in the tender are IBM, ITC and Plessey.

NEWS IN BRIEF

Satellite goes into service

THE first satellite earth terminal at the new Post Office ground station at Madley, Herefordshire, has been put into service to provide a large capacity for telephone, telefax and television traffic via the Indian Ocean Intelsat 1A.

Prime contractor in the £8 million contract was Marconi Communication Systems, and subcontractors included Mitsubishi Electric for the 32 metre antenna subsystem and Comtech in the US for low noise amplifiers.

Prices down

THE Digital Systems Division of Texas Instruments has cut prices on its range of impact printers. The model 810 receive only printer now costs £1,430, while the model 820 keyboard send-receive unit is £1,760.

Ruf takeover

COMMERCIAL minicomputers and VRCs built by CTM and Hohner in West Germany, and Hermes of Switzerland, are now being sold in the UK by Scan Data International of Haywards Heath, Sussex, which has taken over their former distributor, Ruf Computers UK. Scan Data already sells Texas Instruments and Allied Business Systems Multibus machines.

European outlet

BASF looks likely to be the European outlet for the IBM 3850 compatible mass storage system developed in Japan (CW, April 26). BASF already sells IBM compatible disc systems built by Nippon Peripherals, the firm owned jointly by two of the companies that developed the MSS Hitachi and Fujitsu.

Malta branch

FIRST overseas branch of CMC's International division has opened in Malta at 86 The Strand, Sliema, Malta. GC Tel. 010-356 511317. At present the new premises are being used as an engineering support depot for CMC installations in Libya.

File management

EMULATION of the IBM 3270 in single or multi-screen configurations is now available with the Reality Royale file management system from CMC. Files held on a remote IBM system and on the Reality Royale can both be accessed online simultaneously by the same VDU because the memory and display of the VDU are partitioned.

There is no dignity in useless jobs

MAY I revert to the Computerview headed "Catch 22 for employers" (CW, March 22) and the predictable reactions of the Apex correspondents (Letters, April 5). I must say I found the article generous. If Apex is "enlightened" it is only by comparison with some other unions with even more restrictive attitudes. I see very little in the report that suggests anything but an underlying narrow parochialism.

The union says explicitly (para 3.31 of the report) that the first priority must be the protection of jobs. Taken in the context of the rest of the report, this evidently means that if particular employers are unable for market, financial, or other reasons, to increase output, diversify, or otherwise maintain a given level of employment, Apex, like the brother unions in the same general field, would be prepared to sabotage efforts to introduce the new technology.

When will they and their reactionary brothers recognise that jobs are a means to an end, the production of wealth? And that much of the wealth produced in the UK must be exchangeable abroad otherwise we shall starve?

There is no room for the over-manning inherent in the continued use of outdated methods. Given the existence of the new technology, a typist futilely typing repetitive text, or a compositor producing metal slugs would be just as productively employed digging ditches and filling them up again.

This is not to say that people displaced should be treated harshly; or that everybody is not entitled to the dignity of a job. But there is no dignity in useless jobs.

In this connection it is notable that only as an afterthought in the very last paragraph of the report, does Apex make a passing reference to the jobs that need to be done in the public sector to which the potential

new wealth made possible by the new technology ought largely to be channelled.

Yet this and the related need for increased taxation (about which Apex is curiously coy) are crucial, and are the issues which an enlightened trade union movement ought surely to be addressing itself with a sense of urgent priority which is nowhere apparent.

Indeed, at this late stage, when the introduction of the new technology in America, Japan and West Germany is already well advanced, the best that Apex can record (para 3.21 of the report) is the "hope" of a trade union movement-wide strategy.

Meanwhile individual unions continue to deceive themselves that they can with impunity persist in the kind of parochial wrecking philosophy at present so rife.

In reality they have two options only: to accept the new technology without more ado; or face the inevitable consequences. In terms of impoverishment and unemployment, of the progressive displacement of the UK from world markets by countries with less obstructive work forces.

The admirable sentiments expressed in para 3.26 of the Apex report suggest that unions might readily concur in this conclusion. Unfortunately much of the remainder of the report indicates otherwise.

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TUC plans for technology

From front page

working week, working year and working lifetime." In particular, it says, this should be seen as inter-related with setting job creation targets for enterprises.

The report admits the difficulty of accurately forecasting the net effects of microelectronics technology on employment, but does point to the underlying economic problem of low growth rates. It states that growth rates in excess of 3% will be needed to absorb current and future unemployment.

Major job losses have already been noted in the unskilled manual trades of manufacturing industry, and are expected in office employment.

To help counter this, the report calls for wide-ranging developments in manpower policy, especially in education and training, and in a variety of enhanced employment services.

Employment and Technology, TUC International Report, 50pp, 40p, published by TUC, Great Russell Street, London WC1.

Commodore endorses ACT package for the Pet

THE Petact business software package from ACT has become the first product from an outside supplier to be endorsed officially by Commodore for its Pet microcomputer.

Commodore is launching the endorsement scheme to cover approved hardware and software add-ons from other manufacturers.

The prime reason for the move is the rapid expansion in the market for microcomputer systems. Commodore itself sold some 3,000 Pets in the UK last year, and has already sold that many this year to date. Worldwide, the company sold 50,000 units in 1978.

Endorsed products will be entitled to an "officially approved by Commodore" logo, and though the company will not become involved in the marketing of these products, many are expected to become available through the company's dealer network.

The Petact business package has been designed to run on the new 16K byte and 32K byte Pets.

Why are my professional abilities dispensable?

HAVING read the article by Jonathan Hamilton (CW, April 19), which discussed the problems surrounding the shortage of computer programmers etc, I felt compelled to offer some personal comment.

I am employed at a pseudo-government establishment and have been closely involved as a programmer and analyst in converting its administration activities from manual and mechanised systems to a reasonably sophisticated computerised network of operations. My 11 years have encompassed all areas of systems and programming activities from feasibility study to implementation stage. In fact, the characteristics of my

experience seem to comprehensively satisfy the list of computer "craft" requirements.

However, my employer is now reluctantly constrained to offer me a sideways transfer into general administration in order to provide for my future career progression. My usefulness as a computer craft employee is endorsed by my employer's reluctance to transfer me out of a computer environment, particularly as it will result in the consequential problem of recruiting and training a suitable replacement.

It is patently clear to everyone involved that I am successful in the computer field, albeit within the limited confines of a

pseudo-government department, and it is obvious that my life expectancy of usefulness within a computer environment has many years to expiry date!

How is it then, that my professional abilities, apparently so short in supply and very expensive to replace, can become dispensable in an extravagant act of expediency?

Jonathan Hamilton's comments are valid but the relevance and proficiency of training schemes will be nullified unless full utilisation of the skills pertinent to the resultant computer professionals is appropriately planned.

R. O. BUTT
Dilcot, Oxon.

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Managing director,
Infotech International,
Maldenhead.

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ference, don't be nervous about asking for your money back if the event doesn't live up to the expectations raised by the publicity.

Finally, I would like to point out that Nicholas Enticknap's reference to Infotech as an "established conference company" is rather misleading. Although it

1 Detailed synopses for each session show that the organisers have taken the trouble to plan the programme.

2 Detailed biographies of speakers; look for relevant experience and status, and don't be fooled by the "big name" syndrome - a lot of conference speakers are "famous for being famous" and have very little to say that is new or interesting.

3 Well-designed and well-written publicity. Although this is not an infallible touchstone by any means, it is indicative of the amount of care and commitment of the conference organisers.

4 Price. It is generally the case that you get what you pay for. When you have made your decision and attended the con-

ference, don't be nervous about asking for your money back if the event doesn't live up to the expectations raised by the publicity.

Finally, I would like to point out that Nicholas Enticknap's reference to Infotech as an "established conference company" is rather misleading. Although it

LETTERS

To: The Editor, Computer Weekly,
Dorset House, Stamford Street, London SE1 9LU

Systems older than the students

I WAS interested in Bernard Allen's comment on training (Op Spot, April 5). We have been teaching computing for some eight years and although the demand from industry and schools to expand on courses continues, we are reaching a time of crisis.

Local schools are demanding courses for their students which lead many of them into the computer industry as operators and programmers. Industry itself requires courses for its staff, especially now with the changes being made due to microtechnology.

Our major problem is one of equipment. We have been using computers and DP equipment which were donated many years ago by local industry. We were then most grateful; but now these machines are failing every day.

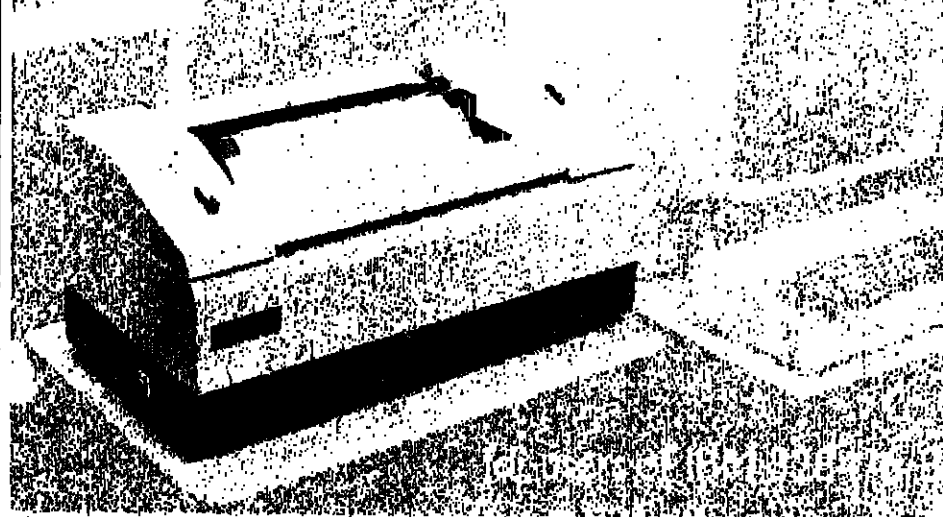
The computers we have at present are a great deal older than the students.

It is envisaged that without a new influx of equipment we will not be able to survive.

I feel that an article outlining our plight, which is clearly not unique in the education field, would bring to the forefront a really major problem in computer training. Colleges such as ours are in a unique position, standing between schools and industry, and yet our resources are totally inadequate.

PETER MOTHERSOLE
Head of Computing
Charles Keene College of
Further Education,
Leicester.

The French Connection

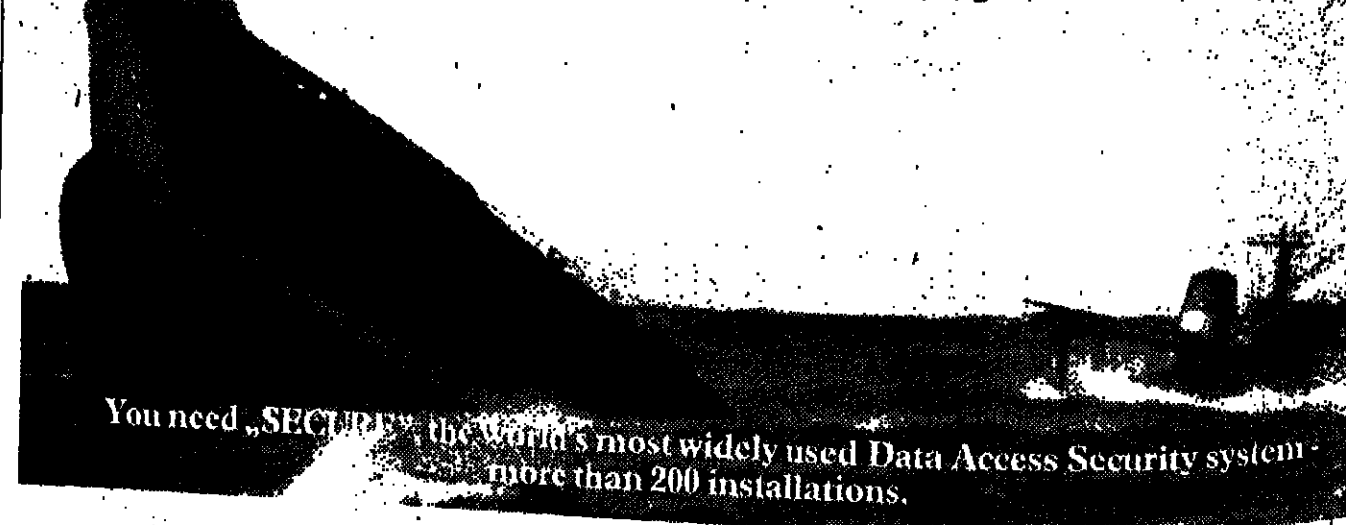


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HANOVER FAIR ROUND-UP

Confident display staged by minimaker Dietz

GERMANY's one surviving independent minimaker, Dietz Computer put on a strong show at Hanover, and managing director Peter Dietz is confident that the company's original software, coupled with the tumbling cost of hardware components, will enable Dietz to remain independent and to flourish.

"We did DM 43 million in our last financial year and were profitable, and we expect to expand to DM 55 million this year," he told Computer Weekly.

This makes Dietz about twice the size of Britain's largest independent minimaker, Computer Technology, but both are minnows by comparison even with their smaller US competitors.

The Dietz product line consists of three fully compatible

processors: the 821 X2, 821 X1 and the Micro-821 which is the AMD 2801 bit-slice version of the processor.

"That was one of our most successful projects ever," says Peter Dietz. "We completed it ahead of schedule and the performance of the machine is higher than we expected."

Like all minimakers, Dietz began in the scientific, educational and technical markets, but is now winning increasing business from commercial customers.

For this market, the product becomes the Dietz 000 series, is offered only with Basic and is sold by a separate marketing force; last year it brought in business worth DM 15.5 million, about one third of the total. Dietz now has 350 commercial installations.

A small company has to concentrate on market sectors which have been neglected by the majors and an important one for Dietz is the construction industry, where a suite of programs called Baudia has been a significant success. Dietz now has a subsidiary called Technovision which specialises in systems for Computer Aided Design, and facilities for this will be an extension of the Baudia package.

The CAD expertise was acquired from a Swiss company and Technovision will ship its first systems this year. Peter Dietz expects the main market areas for the systems, which incorporate the Dietz mini, will be in mechanical engineering, architecture, construction and things like installation planning for air-conditioning.

On the technical side, an attractive facility is offered by the Dicos extension of the standard XOS operating system. Dicos enables a federal system of Dietz minis to be built up, with all applications and all compilers common to all machines; the number which can be used in such a system is theoretically unlimited, but of

the 10 currently running, the largest is at Regensburg University. There a system with nine processors is serving the physics and chemistry departments; one large processor handles background processing and controls the disc, while the others provide simultaneous service to a large number of users.

New from Dietz this year is an X23 packet-switching interface, demonstrated at Hanover between a Micro-821 and a 821 X2; German universities are planning to set up a national X23 network between computer centres, which makes this an important facility for Dietz. Also on offer was a new Cobol compiler developed in conjunction with the big German software house MBP of Dortmund.

Outside Germany Dietz has distributors in Austria, Switzerland, France and Benelux. Peter Dietz was also a member of the recent EEC hardware delegation to India and is hopeful that some kind of collaborative agreement can be hammered out with an Indian company, possibly involving manufacture of the Micro-821 for sale in India and the Far East.



In the foreground is the Micro-821 with a perspex cover to show the ingenuity of its assembly, while behind are two of the many VDUs which give demonstrations on the stand. These came from the Norwegian company Tandberg, which is in process of being restructured following financial difficulties. Siemens is another major customer of Tandberg's data systems division, helping to ensure that this remains in business.

Olivetti reveals the revamped BCS 200

ITALY'S Olivetti took the wraps off a major revamp of its computer product line at Hanover with three models of its BCS 2000 line of office computers, and the first airing of the Micro-data Express in Olivetti colours.

Given a sneak preview at Sicob last year, the Intel 8080-based BCS 2000 line now includes four models. Bottom of the line is the 2020, which has already found favour as a terminal with users of the big German Datavac bureau for tax consultants. Magnetic tape cassette

backed, the 2020 includes integral 80 chips printer and 32-character strip display. The 2030 comes with a wider, 100 chips split platen printer, is backed by Olivetti's proprietary 8K byte micro-diskette and offers magnetic ledger cards as an option, while the 2035 adds full screen display.

Programmed in Cobol and run by a virtual memory operating system, the Express, renamed the Olivetti 1800, runs an unlimited number of foreground and background jobs at up to 18 terminals.

Biggest turnout yet at Crawley Centre

COMPETITORS maintained their enthusiasm throughout an increasingly chilly day at the South-East regional heats of Computastars, held at Crawley Sports Centre. The event proved the best supported to date, with 28 men's teams and 18 women's teams competing.

London University women's team showed a strong family spirit, with three sisters, all of whom work in the University of London computer centre, involved in the event. Estelle Hughes and Anita Philpott were team members, while the third sister, Elaine Davies, came along as coach.

The team proved that family solidarity pays by coming third to win themselves a place in the final.

Two new events in the competition were rugby dribbling, which involved running with the ball, dribbling and scoring a



"try", and javelin throwing. The South-East heat was sponsored by Wright Air Conditioning (London). Trophies were presented by Colin Brooke, the company's managing director, to the winning teams, Legal & General women's and National Provident men's.

Individual winners were Bridget Cuthill of Legal &

General and Geoff Clarke of the London Borough of Lambeth, one of last year's finalists.

Full results: In the men's event, won by National Provident with 81 points, Legal & General tied with London Borough of Lambeth for second place with 70½. Commercial Union 1 were third with 61.

In the women's event, Legal & General 1 with 93½ beat Commercial Union into second place with 80½. A virtual tie for third place was declared between University of London with 66 and Segas with 65½. All these teams go through to the final.

Men's individual winner Geoff Clarke scored 20½ points. Dave Cross of National Provident came second with 19½ and P. Dade of Legal & General 1 was third with 17½. In the women's individual event, Bridget Cuthill scored 36, L. Cotter of Segas 1 33, and Ann Daniels of University of London 28½.

In the secondary competition, London University beat Segas in a tug-of-war to go through to the final, to be held at Crystal Palace on September 29.

The next heat will be at Westcliffe Mount Sports Centre, Cleeve, Leeds, on May 13.



Left: Touching the halfway mark in the hotly contested Women's Sprint.

Right: Mike Parks of National Provident's winning men's team gets a congratulatory handshake from Colin Brooke, managing director of Wright Air Conditioning (London) which sponsored the South-East heat. The other team members are (left to right): Rab Caw, Dave Cross and Graham Bridges.



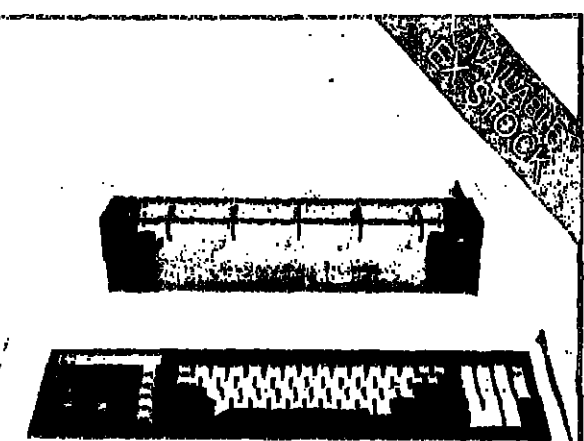
Above: Geoff Clarke of the London Borough of Lambeth, who won the men's individual event.



Above right: Happy smiles from the winning women's team from Legal and General - left to right: Val Smith, Bridget Cuthill (who was also winner of the individual women's event) and Anne Bragg.



Right: Some young sports fans relax on the high-jump landing mattress.



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Siemens and the office of the future

SIEMENS' contribution to DP and the office of the future was the theme of a Hanover Fair presentation by Dr Anton Peil, managing director of the Data and Information Systems Product Group.

Looking forward to the next 10 years, Dr Peil anticipated that worldwide annual DP industry revenues would double but that the hardware share within those combined revenues would drop from 50% to 20%, while software product sales and

licence revenues — of both mainframe manufacturers and independent software houses — would grow from 50% to 80% of the total.

In Europe and West Germany, however, Dr Peil foresaw a sharper growth in the DP market than in the world as a whole, as the West German market catches up with the US. The computer/population ratio in West Germany is a little only 80% of the US ratio in 1970, but should be equal to the US ratio

by the late 1980s. This means that over the next 10 years the average growth rate in DP system sales should be 10%.

In reply to a question Dr Peil denied that Siemens R&D and products were any longer technologically behind either US or Japanese products by more than six months at the most. "As from the beginning of 1980 we shall be delivering large-scale 7.770 and 7.780 DP systems incorporating 84K bit chip memories, which are as advanced as any product

currently on offer by either US or Japanese manufacturers." And since lower production costs to hand in hand with the degree of VLSI circuit integration, Siemens component and systems manufacturing costs are now fully competitive.

Dr Peil admitted that the current high West German Post Office rates for data communications lines had acted as a brake on the development of teleprocessing networks by West German users.

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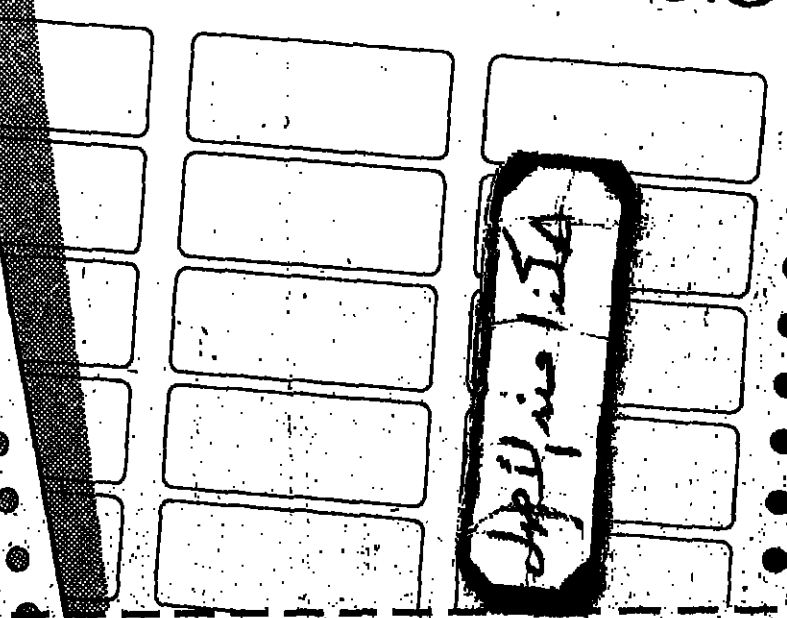
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Union leader warns of a 'shop floor backlash' on jobs

THE unions are looking to government to create the right social environment to make it "financially and psychologically viable" for unions to release people and jobs to allow new technology to come in. That is the view of ASTMS research director Barrie Sherman.

He told the ICL Computer User Association's convention that although he believed the loss of jobs through the use of information technology might be reversed after about 20 to 30 years, he was sure many jobs were threatened and this could lead to a strong backlash directly from the shop floor.

Michael Bury, director of education, training and technology at the Confederation of British Industry, agreed that "we must exercise a due care and concern for those people whose working lives will be affected by technological changes."

But he warned that while "we must strike a reasonable balance

between ruthlessness on the one hand and timidity on the other, the latter seems to me at present to represent potentially the more real danger."

Both Sherman and Bury emphasised the importance that education would play in preparing people and industry for the future.

Sherman said he believed that children and adults would have to be trained to widen their options in a society where there might be a different balance between work and leisure and he hoped that new jobs would be created in areas, such as the health service, where technology could be applied to fulfil the needs of people.

Bury said that industry would do well to overstate requirements for skilled technological staff rather than to underestimate them.

While he welcomed the fact that the government had woken up to the need to create wide awareness in industry of the

application of microelectronics, he was not convinced that plans for one-day education sessions could produce the lasting effect needed.

"In our view, the best way of getting home the message is to enable people to see for themselves what is already being achieved in other firms, other industries and other countries," he said.

Although Sherman accepted that there were probably greater dangers in turning our backs on technology than in using it, he warned that historically major innovations such as the steam engine and electric motor had not led to a "smooth continuum of change" and had led in the 19th Century to untold misery and squalor. Between 1874 and 1895, he said, there had been such a major slump that emigration was the only way of avoiding major upheavals and he believed a similar period of uncertainty could occur over the next 20 years.

He believed the UK was in a uniquely optimistic position, however because, despite the slump in world trade, we had North Sea oil revenue which could be used to finance the social and economic environment which would cushion the shock of the job losses and de-skilling, which he believes will be an inevitable consequence of the introduction of technology. Returning to a familiar ASTMS theme, he said that society needed to have a new attitude to the "work ethic" and to accept that, for many people, "leisure time" would necessarily outweigh time spent in traditional concepts of work. If finance was not found to create the right social environment, however, Sherman believed the only way of getting through the next 20 years would be through policies "implemented at bayonet point" to pacify the rising tide of discontent among the unemployed, particularly the young never-employed.



SHERMAN... "many jobs are threatened."

Tributes to George

ON the tenth anniversary of the launch of George 3, ICL users offered numerous unsolicited testimonials for the dear old 1900 George operating system. And 2900 DME, which enables George environments to run on the 2900 series, also received overwhelming praise.

ICL CUA chairman Jim Rothwell, however, warned that there had been a lowering of expectations of users on the 2900 series. On George, he said, users had become used to months of uninterrupted running whereas with VME/B there was talk in terms of the numbers of hours between failures and a VME/K user, Bob Haacke of Berlei, said he would be happy if VME/K lived up to its expectation within two years.

"ICL has been lucky that its users have shown so much goodwill and patience with the development of VME/B," commented Rothwell. "We are going through the same learning curve with it as early George users went through and I would have hoped that ICL had learnt something from its previous experience."

Rothwell and Haacke both welcomed DME as a short-term aid, but stressed that users should never get the idea that it was a long-term solution. "DME is great but I bought our 2950 for VME/K," commented Haacke.

On the difficulties of developing VME/B and K, ICL reiterates that operating systems are complex entities and suggests that in a few years there will be the same user affection for these systems as developed for George 3 following the sorting out of early George development problems.

Key to program design

● From page 4

then includes the minimum number of data structures (including intermediate ones) needed so that each program which processes one set of data structures to give another set does so without having to resolve a structure clash (there are some specific exceptions, "sort" being the most obvious one).

The aim of structured programming is to make programs reflect the problem being solved and not the other way about. Since the solution to the problem is to build the bridge between input and output data structures, it is equivalent to say that the structures of programs should be based upon the structures of the data they process.

But we need some means of ensuring that input data structures — file structures if you like — in turn reflect the natural clustering of data in the real world. Relational design gives us just this.

How difficult is this design technique to introduce in practice? The approach which follows should not prove too traumatic even to the most reactionary of systems staff:

● When analysis has been completed and record layout sheets drawn up, check the layouts for Fourth Normal Form and revise if necessary. Each record layout should then be signed off as logically correct.

● Create implementable data structures for these record types using inter-file relationships as a guide. The resulting file or database structures or screen panels should then be signed off as implementable.

● Create sufficient data structures to avoid structure clashes within programs (with specific exceptions such as "sort"). The data structures together with processing requirements form a program specification which is then signed off as logically correct.

● Finally, turn the processing requirements first into structured programming pseudo-code and then into a program module structure (usually a hierarchy). The result is signed off as implementable.

There are many other approaches; some use reams of special forms for the different stages of system development; others use formal data structure analysis and tools such as data dictionaries.

1. Principles of Program Design; Academic Press (1975).



Fibre optics take over

FIBRE OPTICS data links are beginning to take over from conventional metal wires where data needs to be transmitted over long distances without being corrupted.

One big computer user which has already adopted the technology is the Grumman Aerospace Corp of Bethpage, Long Island, New York, whose fibre optics engineering specialist Jack Mooney, is seen (left) observing transmitted light through a filter at the open end of a fibre optic cable.

The cable is being held by Ed Ayres, an electro-optical engineer with the Valtac Corp of West Boylston, Massachusetts. Valtac has supplied Grumman with fibre optic equipment that now links Grumman's IBM 370 with an interactive graphics system located more than three kilometres away.

The cable used measures 0.825 inches in diameter and can carry up to four full-duplex channels.

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FINANCIAL NEWS ROUND-UP

Enter a Matchmaker...

ARIEL is improving the existing equities dealing service by providing its 40 subscribers with a facility called Matchmaker involving a "discreet" file of large volumes of equities that subscribers want to buy or sell.

With the existing Ariel system the buying or selling wishes of each subscriber are broadcast to every other subscriber, an arrangement that can be a cause of embarrassment when a very large chunk of a particular stock is involved and the subscriber fails to find a buyer or seller.

Matchmaker will take over the Ariel network for about 10 minutes each day and will run on the Digital Equipment PDP-11/40 that acts as back-up to the 11/40 that runs the existing system. The identity of stocks on the Matchmaker file will be broadcast to subscribers and those who are interested can indicate their wishes to the system without other subscribers knowing who they are.

Most Ariel users are funds managers of major institutions who do not need the Stock Exchange for their activities.

Ariel aims to cover gilts dealing as well

ARIEL, the computer based stock dealing service that competes with the Stock Exchange, looks like extending its competition to cover dealings in gilt-edged stocks as well as equities. The Stock Exchange has already announced its own plans to computerise gilts dealing. The managing director of Ariel, Garry Arnott, told Computer Weekly that Ariel had not taken on gilts dealing till now because of the insistence by the Bank of England that Stock Exchange jobbers are essential for gilts trading.

The Bank's views are normally treated with respect by Ariel because the Ariel operation is owned by a group of merchant banks which have to maintain good relations with the Bank.

However, Arnott pointed out that the Wilson Committee, which is currently studying the workings of City institutions, had dismissed the Bank's views on the necessity of jobbers as nonsense. For that reason Ariel would probably be offering gilts dealings by the end of the year to its existing subscribers, most of which are major investment institutions.

Arnott believed that the gilts operation could probably be handled by Ariel using a time sharing bureau. It would not justify installing another minicomputer system.

The Stock Exchange and the Bank of England have a joint committee looking into the computerisation of gilts trading which has recommended that a completely paper-free minicomputer based system should be developed.

National Semiconductor sales reach record level this year

NATIONAL Semiconductor reports record sales for the 12 weeks ended March 4. The quarterly sales figures were \$165.3 million, which was a 49% increase over the same quarter in 1978. Before tax profit for the quarter was \$14.2 million and for the same quarter in 1978 \$9.4 million.

For the 40-week period ending March 79, the company's total sales were \$518.3 million compared with \$380.8 million for the same period in 1978. There has also been an increase in engineering and development expenditure from \$30.4 million to \$49.8 million for the 40-week periods.

Capital expenditure has doubled from the 1978 40-week period of \$27 million to \$54 million in the 79 period. The company forecasts continued sales growth for the next quarter.

KALAMAZOO revealed that a quarter of their profit before tax of £2.09 million for the six months ended February 2 was derived from the group's computer systems and services division. Group total sales for the six months were £12.09 million.

SCIENTIFIC Time Sharing Corp made operating losses of \$283,000 on its European operations during the 13 weeks ended February 28. During 1978 the company established a wholly owned subsidiary in West Germany and expanded the operations of its UK subsidiary.

Group sales for the quarter were \$4.3 million compared with \$3.5 million for the same quarter in 1978. Profit before tax for the two quarters was \$0.6 million in 1979 and \$0.4 million in 1978.

DATA Terminal Systems, a US electronic cash register manufacturer, had sales of \$19.6 million and profit after tax of \$4.2 million for the quarter ended January 31. Figures for the corresponding period last year were sales of \$13 million and profit after tax of \$2.4 million.

BROWN Boveri Kent's accounts for the year ended December 31,

1978, show sales have increased from £68.85 million (1977) to £81.12 million. Profit before tax was £8.3 million and £7.4 million respectively.

RAYTHEON, the US parent company of Data Logic, announced profit after tax of \$43 million and sales of \$898 million, for the quarter ended April 1. The corresponding figures for the previous year were \$32.6 million and \$769.4 million.

CENTRONICS quarterly report for the period ended December 31 shows sales of \$32.4 million making a profit before tax of \$6.1 million. Comparable figures for the same quarter in 1977 were \$17.9 million and \$4.3 million.

DATA General Corp sales for the 12-week period ended March 17 were \$112.4 million, pro-

ducing a profit after tax of \$12.2 million. Figures for the previous 12 weeks were \$105 million and \$11.7 million.

CONTROL Data's first quarters profits after tax were \$25 million compared with \$15.7 million in the first quarter of 78. The contributions to these profits earned from computer operations were \$11.8 million (1978) and \$4.4 million. Total sales for the two quarters were \$492.1 million (1978) and \$400.4 million.

FAIRCHILD Camera have forecast total sales to be more than \$1 billion by 1982. Sales in 1978 were \$550.4 million and in 1977 \$470.4 million. Semiconductor sales are expected to account for about half of future total sales. Semiconductor sales in 1978 were \$383.4 million and \$321.4 million in 1977.

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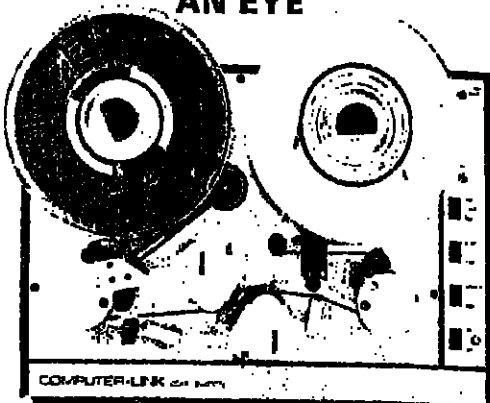
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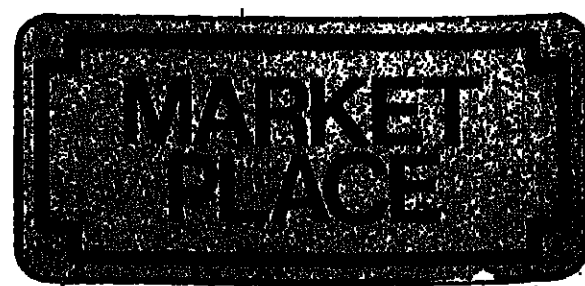


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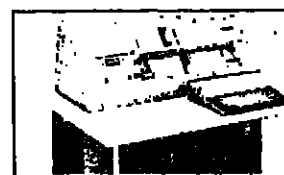
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Leap-frogging with IBM on minis holds no fears

BY forging strong but ethical links with OEM customers, and giving preferential treatment to none, Data General feels very comfortably placed to compete with IBM. So says Ray Piggott who, as managing director of Data General's UK subsidiary, heads the largest unit of the company outside the US.

"The IBM System 36 and the 4300 are too new for us to say what their impact will be on our business, but we have seen no business slowdown as a result of the IBM Series 1 minicomputer so far.

"The minicomputer manufacturers have carved out their own niche in the market, and IBM is trying to enter it. Series 1 has had no major impact on that market so far, but we know it will come one day. When it does we will be prepared for it.

"But the implication that minicomputer manufacturers are trembling at all the new IBM announcements is quite wrong. We were prepared for them. The number of pure IBM shops has diminished, because customers are more price-sensitive than hitherto.

In Piggott's view, the essential prerequisites to success include three key elements: good field engineering, software support, and compatibility through the range.

"OEMs are attracted by the compatibility throughout our range, and we do most of our business through OEMs", he said. "We also offer a very good and uniform discount

ONE minicomputer firm which does not feel threatened by the mainframe manufacturers' attempts to break into its markets is Data General. TIM PALMER talked to the managing director of its UK subsidiary, Ray Piggott, who tells why his firm is comfortably placed to fend off IBM's challenge.

structure, which means that we are in better shape than many in the minicomputer business to compete with IBM."

The fact that IBM is competing for the first time on both price and technology does not worry him either.

"Data General is already established in the mini market, whereas IBM is new. We add a significant new Data General product every 15 days, and technological advance is a leap-frogging process: one day they move ahead of us, and then we move back into the lead."

The strong moves within IBM to offer software which is much more easy to use and is designed to enhance programmer productivity holds no fears for Data General either.

"The fact that we have Anas 74 Cobol right through our CS range, from the Micronova-based CS/20 through the Nova-based CS/40 to the Eclipse processor in the CS/60 is a

major strength. And our software is universally acceptable, not exclusive to Data General.

"I have to be careful about saying anything on forthcoming products, but there could well be something to improve programmer productivity on our horizon."

Interestingly, Piggott says that Digital Equipment is no longer Data General's main competitor; he names NCR, Burroughs, ICL, IBM, Prime, Texas Instruments and Honeywell's Level 8 mini as all featuring in different competitive bids.

To suggestions that the move into microelectronics was a mistake, he is adamant that it was an essential decision.

"The business is profitable, and Data General is fully committed to vertical integration of its business. We are not a semiconductor manufacturer but a producer of highly sophisticated computers where component quality is of vital importance. And we have just tripled the space in Sunnyvale devoted to semiconductor research and manufacture."

The UK company is bigger than any British-owned minicomputer company apart from Ferranti: in the year to September 30, 1978, it had sales of £14.1 million, on which it made a pre-tax profit of £851,000. Tax took £478,000, leaving a net profit of £473,000. The company employed 255 people in September but the figure will pass the 300 mark this year.

Washington steps up office automation plans

THE US Office of Administration services many of the functional requirements of the Executive Office of the President, one of the key arms of the government machine. It is currently making comprehensive plans to use both computers and office automation techniques to help in the administration of domestic policy-making in the States. MARTIN BANKS went to Washington, to find out what is being planned.

DEMONSTRATIONS of both viewdata and the National Aeronautics and Space Administration's Digital Information Display System to staff in the Office of Administration of the US government are the most viable aspects so far of the move within the Administration towards much greater use of office automation.

By the end of this year it is hoped that the basis of a complete information system will be installed in the Office of Administration's home, next to the White House in Washington.

This basic configuration will comprise two host systems, one handling data processing and the other office automation. Specification documents for both have been with potential suppliers for some time, together with requests for proposals, and firm orders for the two systems are expected to be placed soon.

Once these orders have been made, the next phase will be the incorporation of communications hardware that will tie the two systems together in an integrated information processing and handling network.

The viewdata and DIDS demonstrations are part of an information technology evaluation project that is due to be completed by October. This will be followed by a report of the project findings.

Behind this activity is an appreciation by the Office of Administration of the need for more comprehensive and organised information systems to support the domestic policy-making process in the US. It was only during the last, Nixon/Ford Administration that computer facilities started to be used to assist the domestic policy-makers, but there was no full-time staff. Machine time was taken on other government-owned systems.

The systems that will eventually be installed as the centres of the new information system planned for the Office of Administration will be comprehensive. For example, the specification for the data processing "host" states that the system will have, in addition to a powerful computation capability, an English-like command structure, and what is termed a "state-of-the-art" file system.

The operating system should be designed to support a large community of non-programming users in an interactive environment, while at the same time supporting a wide selection of programming languages, such as Fortran, Cobol and PL/I, as well as database management systems

and applications development tools.

Projections given in the specifications for the growth in use of the systems within the Administration are interesting. In the first year of operation, the planned number of simultaneous users will be 60. By the fifth year of use, this number will have risen to 110.

They will have online access to 22 database files in the first year, and in the fifth year, the number is planned to rise to 262 files, with a total of 3,500 file transactions per day expected.

All these users would have access to the system through government-supplied terminals, with which the system would have to interface.

The "host" for the office automation system will be required to support an electronic mail facility, together with a document production and control. Among the most interesting factors specified for the system is a high degree of adaptability. This demands that a "user profile" should be maintained for each user on the system, which defines the way the system looks to the user, and the manner in which the system interacts with that user. In addition, each user should be able to modify the options available in his profile.

There will also be a provision for text editing in the system, taking input from a variety of peripherals, with output to printers, hard-copy terminals and video displays.

The electronic mail facility will be able to handle the preparation and distribution of mail, as well as message storage.

The next stage in the operation will be specifying the communications system needed. The current problems that of providing sufficient bandwidth, especially as the first application being considered is the electronic mail network within the Old Executive Office Building.

It appears that the favourite solution for the communications network at present, for not only does this offer sufficient bandwidth, but it also has the added advantage of a security-conscious organisation of not radiating signals in the same way as hard-wired electrical cables do.

There will possibly be some shedding of staff when the systems are installed and running. For example, of the 137 people employed by the Office of Administration, 45 are involved solely in the creation and transportation of bits of paper. Electronic mail will probably change these numbers.

COURSES

THE Urwick Management Centre of Slough is holding a two-week course on advanced systems development from May 8-16. The course is designed for systems analysts with at least five years' experience. A three-day course, ICE Conditions of Contract, will be held from May 6-11, and is aimed at senior executives in construction, client authorities, the professions and public authorities. Senior Management is the title of a three-week course for chief executives of small and medium-sized businesses, from May 14 to June 1. Details from A. Swenson, Deputy House, Stoke Poges Lane, Slough, Bucks, TF9 3JH.

Hoskyns Education is holding a series of courses in May. These include: Systems Management of Data Processing, for senior users, from May 28 to June 1; and Project Managers for system managers, from May 11 to 16. Courses are designed for systems managers, programmers and operators.

All courses are residential at the Hoskyns Education Centre in Bournemouth, with the exception of the Systems Management course, which will take place at the St. Hugh's Hotel, London. From May 21 to June 1, details from A. Swenson, Deputy House, Stoke Poges Lane, Slough, Bucks, TF9 3JH.

Appointments

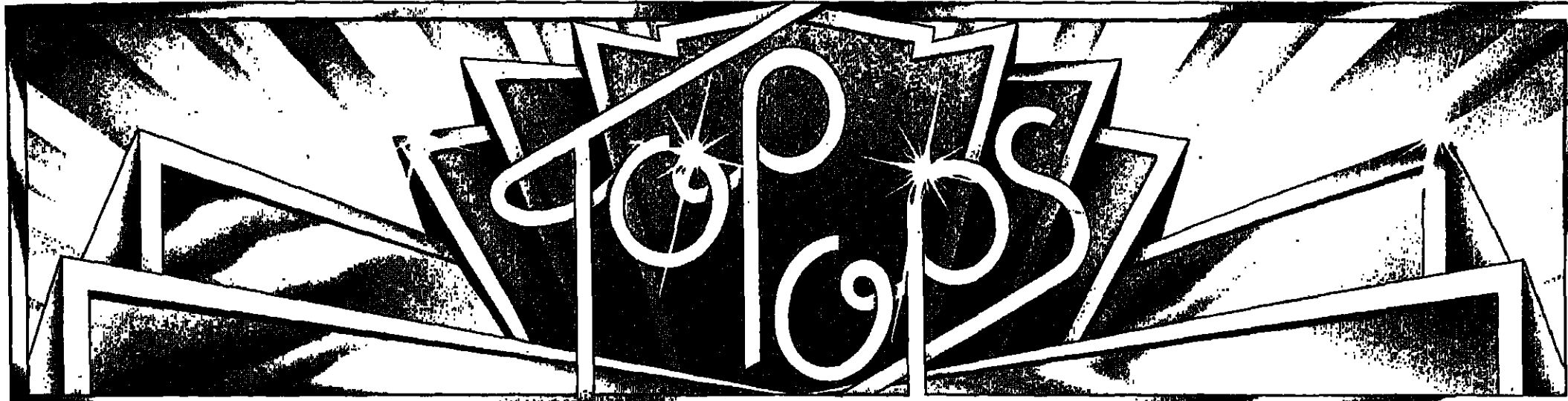
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REF: 2217

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REF: 2082

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REF: 7011

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REF: 2281

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- Excellent career prospects
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REF: 7006

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REF: 2286

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REF: 2237

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REF: 2230

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REF: 2081

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(Ref PS/01)

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(Ref PS/02)

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Vacancies exist in our Greenford, Birmingham and Manchester offices.

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Programmers

(Ref TS/03)

To work on systems software, emulators and advanced packages for applications such as data entry, for Data Logic's PLS100 range of terminal and distributed systems. This is an outstanding opportunity to gain experience in the development of complex high performance standard software. Programmers will work in small teams, taking considerable responsibility for distinct functional areas of the total system.

Applicants should have one to three years experience of software implementation in high level or assembler languages. A degree in computing science is desirable. Location will be Harlow, Essex and salaries will be in the range of £4,500 to £6,500.

Data Logic

Write or call, quoting the appropriate reference:
Kathy Martin, Data Logic Limited, 29 Marylebone Road, London NW1
Telephone 01-486 7288.

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Having established an enviable reputation for the quality and efficiency of its software packages in the United States over the past ten years, this company's venture into the U.K. market has proved to be astoundingly successful.

To further expand and consolidate this relatively new venture, room has been made for an additional Sales Executive to join the London team. The appointee will be able to rely on high-level technical expertise as support back-up, but candidates will ideally have had systems project management experience prior to entering the sales field.

Career prospects are superb - the company's next step will be into Europe, so Sales and Branch Management positions will be available.

Contact: Andy Wright

Sales Executive - Industrial Systems

London

c£9,000 + car, bonus and fringe benefits

A large well established group with a leading name in the process control and industrial systems market wishes to appoint an additional Sales Executive to assist with the current demand for their services.

Applicants should have at least five years experience in the design and implementation of industrial applications using micro or minicomputers. A successful record of both sales and project management is essential. Knowledge of process control, instrumentation, automation of production systems, programming (CORAL, RTL/2 or ASSEMBLER) would be useful. This is an outstanding opportunity to join an expanding group where both technical and sales ability will be fully utilised and well rewarded.

Contact: Jim Baker

Engineers - Field Support

All Areas

to £8,000 + car & benefits

A number of clients, principally manufacturers or suppliers of micro, mini or terminal systems are seeking experienced engineers for first line support.

Generally, the work involves dealing with a variety of problems associated with hardware and diagnostic software. Candidates will be expected to have the experience to solve any client problems. Applicants should have a minimum of one year's experience in a field engineering environment and have at least ONC in electronics. Most companies provide intensive training and follow this up with interesting and demanding field work.

Excellent remuneration packages (c. £8,000), career prospects and work involvement.

Contact: Margaret Stevens

For further information on any of the above vacancies please contact the appropriate consultant.

If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

JAMES BAKER ASSOCIATES, International Personnel Consultants
16 Maddox Street, London W1. Tel: 01-491 4478

Communications Consultants

Essex

up to £11,000

A well known International Group are embarking on an ambitious project to develop a system which will be used as a tool for designing message and packet-switching software. Their requirement is for at least one managing consultant to produce overall design concepts including software methodology techniques; several software planning staff, with in-depth IBM software knowledge, to implement design procedures, and at least two Systems Programmers to facilitate integration.

The work will be carried out on large IBM machines, so appropriate IBM experience is essential. If you feel that you are possibly suitable, please call to discuss in more detail.

Note: Systems Programmers must have a degree and salary could be in region of £9,000.

Contact: Mike Creamer

Engineer Programmers

North Surrey

£8,000 - £8,500

This company, a subsidiary of an extremely large engineering consultancy group, specialises in producing individually tailored industrial systems, usually based on either PDP11 minis or INTEL micros. All successful candidates can have a career leading to Chief Engineer and above - your capabilities and drive will be well rewarded.

Applicants should have at least 1 year's mini or micro systems experience with a good knowledge of a low level language. If you also have an Engineering or Electronic degree and/or experience of hardware design, this would prove an added advantage.

A career with this company will ensure total involvement in the latest techniques and applications of control processing.

Contact: Andy Wright

Basic Programmer/Analysts

London based

min. £6,500 +

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Contact: Andy Wright

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The successful candidate will work very much as a Client/User representative implementing dynamic systems for a progressive management team.

Ideally, he should be a bright and well motivated computer professional with **sound business experience** and should have:

- 4/5 years' Analyst/Programmer experience (at least 2 of them with on-line applications)
- Implemented major projects
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THE REWARDS:

In addition to a **variety of work** in a progressive environment, you will receive an **attractive salary**. Fringe benefits are first class and include career development, training and non-contributory pension.

Relocation assistance will be available where appropriate.

All applications will be strictly confidential and your identity will not be disclosed to our client without your consent.

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NW1/0305

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An IBM 4331 has been ordered by our client as the upgrade for their existing hardware and in order to help establish system development plans for the future an additional programmer analyst is required. Present systems are well established and involve sophisticated batch and teleprocessing computing for which the IBM 4331 will provide further system development capability. The major development language is RPGII, however, candidates who can demonstrate a sound programming background gained in an IBM 370 DOS installation will also find this position to be of great interest. The company are able to offer formal training in technical areas and all the usual benefits associated with a successful business operation.

NW2/0305

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Our client is a major manufacturer supplying the construction industry with a comprehensive range of nationally known products.

To be considered for this position you must be presently employed as a Programmer/Analyst, be educated to at least 'A' level standard, have been in DP for 4 years or more and gained good COBOL experience.

If you have these qualifications the starting salary is within the quoted range in addition there are re-location expenses where applicable, contributory pension scheme, subsidised canteen and sports and social club.

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The Gateway Building Society with assets of £600m is one of the larger societies in the country. A Shift Leader is now required for the main offices in Worthing, on the Sussex coast.

The Person:

The successful applicant must be able to demonstrate that he/she has at least 5 years operating experience, at least 3 of which should have been on IBM machines preferably using the operating systems mentioned below. Previous supervisory experience would be an advantage.

The Installation:

A 2-shift system is in existence during which the Society operates its on-line and batch systems on an IBM 370/148 under DOS/VS, CICS/VS, POWER/VS and VM/CMS.

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Applications giving details of relevant experience to date should be sent to:

The Data Processing Manager
Gateway Building Society
PO Box 18, Worthing
West Sussex BN13 2QD



CLASSIFIED COPY 31st ISSUE

This issue is affected by the Bank Holiday. Copy for this should be sent early to arrive not later than the Friday preceding date of publication. ONLY a small amount will be accepted on each Tuesday morning. Your co-operation will be much appreciated.

For further details contact David Abbey
Tel. 01-261 8016. Telex Bisenpress London 25137

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Applicants will already be successful technical applications programmers with "In Depth" FORTRAN experience, preferably with a knowledge of C.A.D. techniques, who wish to move into the more challenging role of systems implementation and customer support. These positions will be based in the U.K. initially, but relocation to Frankfurt, for a period of 1 year or more, is necessary. The salary will be re-assessed when relocation is effected.

APPLICATIONS CONSULTANT — UK & EUROPE. NEB c £10,000 p.a.

Your prime responsibilities are in a POST SALES environment where you will be assisting client customers, as a consultant, on effective system usage and further updates and development.

Your background should include a good working knowledge of FORTRAN, preferably within a Numerical Control and Graphics environment.

SYSTEMS SPECIALIST — UK NEB c £9,000 p.a.

Essential requirements: 3 years plus FORTRAN, Technical Development Applications experience. A working knowledge of Assembler and previous exposure to Numerical Control and/or graphics applications, would prove invaluable to successful applicants.

APPLICATIONS PROGRAMMERS —UK NEG c £9,000 p.a.

Successful candidates will be above average programmers with some technical Systems Analysis experience. Your prime responsibility being to "Tailor" and write 'back-ends' to a graphics package with occasional 'bespoke' development.

COMMUNICATIONS SPECIALIST — UK & EUROPE. NEG c £11,000 p.a.

Candidates will have an "In Depth" general background in all aspects of Communications and although the position does not necessitate an IBM background, a knowledge of SDLC protocols and S.N.A. would be advantageous.

THE COMPANY — is the European subsidiary of the fastest-growing U.S.A. C.A.D. and graphics specialist in the world. The results over the past few years have been exceptional, creating an unprecedented demand for above average technical skills as outlined above. Initially, all positions will be based in Central London or Buckinghamshire, but candidates should be prepared to travel throughout the U.K. and Europe, approximately 25% of the time.

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Irrespective of your current salary, if you believe you have the ability to successfully handle the above positions, our clients will offer you a salary and career second to none. For more information please telephone now quoting reference number DVW 79/9.

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We have recently moved into a brand new computer complex on the outskirts of Swindon. The building offers excellent working conditions, canteen and sports facilities.

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We supply a central processing function to all groups within our Company, using a network of mini-computers and two 2900's, one running under VME/B with 2Mb store and one running under DME with 1Mb store.

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This is an ideal opportunity for keen and enthusiastic programmers with a minimum of 1-2 years' User Code or Assembler experience. Relevant training will be given in other facets of the job.

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are required by HASLER AG, Bern, Switzerland, who are working on the DIGITAL COMMUNICATIONS SYSTEM OF THE FUTURE as a joint project with the Swiss PTT and leading telecommunications companies. To assist with the development of software for this fully electronic, process controlled communications system (IFS) we are looking for Software Engineers. The Job: The design, specification, implementation and testing of software for a complex, real time multi processor system. We will provide a familiarisation period and the opportunity to expand your knowledge.

Your Qualifications

Thorough experience in the development of software for processor controlled systems using an Assembler language. A sound technical education coupled with the ability to abstract. Knowledge of the German language or the willingness to undertake an intensive German course. The place of work is in Bern, Switzerland. The working language is German. We offer attractive employment conditions with a starting salary in the range £11,000 to £16,000.

Please call in the first instance 01 (081 080), Extension 1, for a technical description of the system and an application form. Interviews will be held in London. Hasler (Great Britain) Ltd., Commerce Way, Croydon, CR9 4XA.

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The Central Electricity Generating Board has a vacancy for an Operations Controller in the Computer Branch located in Bramhall, Cheshire. The 192K ICL 1904S is to be replaced by a 2.5 megabyte ICL 2960 early in 1980. Transition plans are well under way but the successful applicant will fill a gap in the existing team and someone who has recently been involved in such a transition will be of great value.

The person appointed will lead a well motivated team of approximately thirty five staff and will be responsible to the Production Controller for the organisation and day to day control of computer operations, job control, data control and data preparation.

Applications should have considerable experience in the operation of a computer installation with extensive communications facilities using advanced operating systems.

Applications in writing, from either sex, giving details of age, experience, qualifications, etc., should be sent to the Personnel Manager, C.E.G.B., Europa House, Bird Hall Lane, Cheshire SK3 0XA to arrive no later than 12th May, 1979. Please quote vacancy number 38/CW.

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Applicants must be mobile immediately. The company will pay for accommodation and a car in the U.S. In addition to a living expenses allowance. Other benefits are available including travel for wife and family if applicable. This is a career position with return to the company in the U.K. when the project is completed.

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Phone Richard Wootten on 01-689 2166 extension 2075 if you would like to discuss details, or contact ISA-UK, Personnel Department, City House, 420-430 London Road, Croydon, CR9 3QR (phone 01-689 2166 ext 2028).



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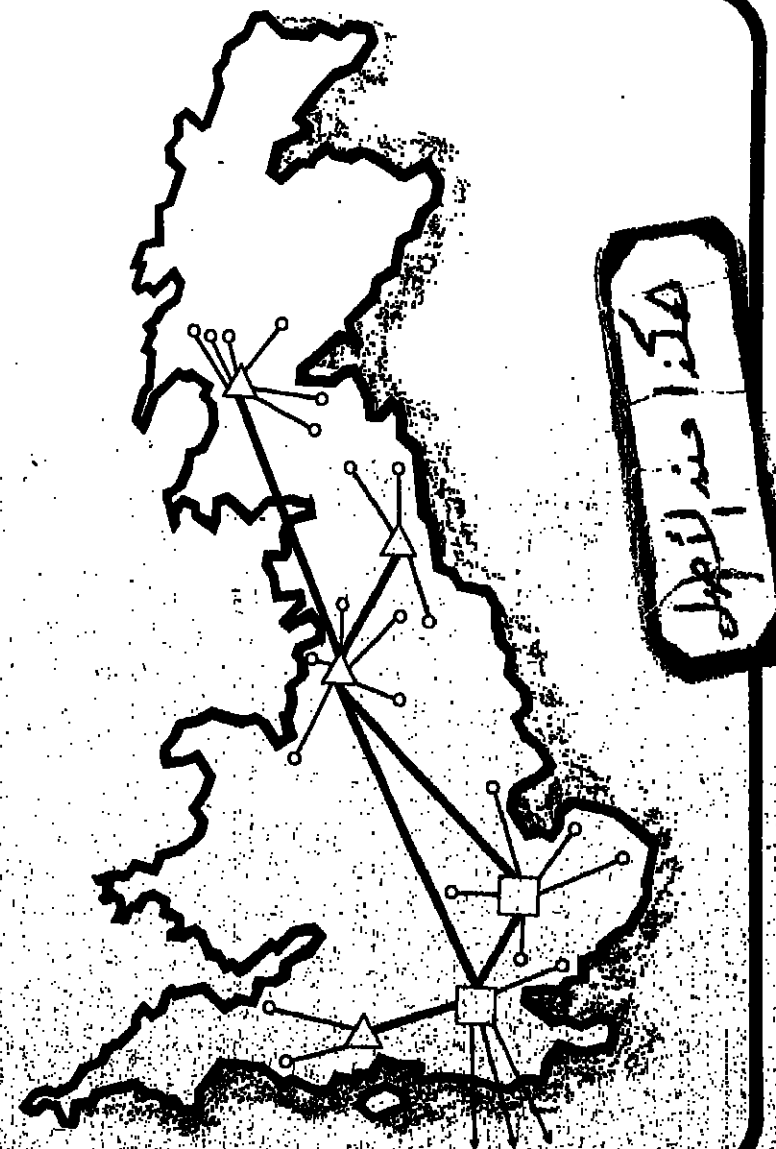
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TO SCHEDULE AN INFORMAL CHAT WITH KEY MEMBERS OF OUR CLIENT'S STAFF:

PHONE (Reverse Charges Accepted) beginning Thursday, May 3rd, at Noon.

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REED EXECUTIVE

Reed Executive is a dynamic group operating in the fields of recruitment, retailing and travel. To cope with continued growth and to provide management with concise information we have developed our own computer facilities using batch techniques on an in house Univac computer, located in the Kingston area. We now wish to expand these facilities by the introduction of communication based systems so providing opportunities for the following:

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Suitable for a Systems Analyst, now looking for greater responsibility and with at least three years systems experience together with a good knowledge of communication techniques. The successful applicant will initially occupy an analytical role but should quickly take full responsibility for a new project team, developing the major communications system.

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Three programmers are required with a minimum of two years COBOL and a working knowledge of Assembler. (Although training may be provided for an applicant with more COBOL experience or another low level language). The positions will be set in a Project environment.

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Suitable for a programmer with at least twelve months practical COBOL experience. Training will be given in Assembler.

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REED EXECUTIVE
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Toyota (GB) Ltd., part of the Inchcape Group holding the exclusive concession for the third largest motor manufacturer in the world, wish to recruit a number of Computer professionals.

The Company has recently installed a Wavetek voice response system being used by all 200 dealers in the Toyota network.

Applications are invited for the position of Computer Operator at our Crawley Computer installation. The position is an important one on a two shift system using an ICL 1902T 80K machine operating under George 11. Ideally, we would require an applicant with a minimum of 2 years ICL George 11 experience for which a salary of circa £4,750 (inc. shift) will be paid.

The Company also requires an enthusiastic TRAINEE whose salary will depend upon past business experience, education, qualifications and age.

Applications should be addressed to: Maureen Cross, Toyota (GB) Ltd, 320 Purley Way, Croydon CR9 4HB or telephone 01-881 1921. Interviews will be held at Crawley.

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EDITOR FOR COMPUTER WEEKLY

An editor is required for Computer Weekly, Britain's leading computer publication which is distributed to more than 82,000 computer personnel in the UK every week, and to a further 12,000 overseas readers ten times a year.

The post, one of the major editorial positions in the UK technical press, will, ideally, be filled by a person with experience of both journalism and the computer industry.

The successful candidate will be required to maintain the high technical and reporting standards which have been built up over the past twelve years, making Computer Weekly the leading newspaper of the computer business.

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The salary is 'negotiable, depending on the successful candidate's qualifications and experience, but will be commensurate with the position of Computer Weekly as one of the most important journals to be published by IPC Business Press.

Please apply to Chris Hipwell, Editorial Director, IPC Electrical Electronic Press, Dorset House, Stamford Street, London SE1.

Senior Programmer and Programmer

Digital Exploration Ltd. are the UK subsidiary of one of the world's leading independent geophysical contractors to the petroleum industry, Digicon Inc. of Houston, Texas.

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You will both need at least 3 years' experience in Fortran and assembly languages, and for the senior position some previous management responsibility is desirable. We offer a creative environment in pleasant surroundings, BUPA membership, free life assurance and contributory pension scheme, and salaries that will fully reflect your background and experience.

Please write with c.v. to the Processing Manager, Digital Exploration Ltd., Digicon Building, Portland Road, East Grinstead, Sussex RH19 4EB.
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Our client, a large Machinery Manufacturing Group with several companies in the East Midlands, has embarked on a long term plan to investigate, develop and implement Computer Systems for all users in the organisation, using IBM equipment.

The successful male or female candidate will be based in the East Midlands and will be responsible for an expanding team of about 10 Analysts and Programmers investigating mainly Group Manufacturing Systems but consideration must also be given to Group Financial Systems.

Our client invites applications from D.P. professionals with at least 2 years management experience in business systems (particularly Manufacturing Systems) and Data Processing. They must have a successful track record of controlling and motivating staff so it is unlikely that anyone below the age of 30 would have the experience required. Whilst experience in IBM equipment is desirable it is not essential.

An excellent starting salary of around £8500 plus a company car will be offered and relocation expenses will be available as appropriate. For an application form please ring Mrs M.C. Townsend on Leicester 56026.

Daytons

MYRIAD MINI COMPUTERS ... MAJOR OPPORTUNITIES CITY BASED

Continued expansion within the Computer Services Division of an extremely diverse group of companies has given rise to several exciting opportunities for professionals able to demonstrate flair and initiative.

Providing computing facilities for the group, it is intended to eventually introduce an ARC distributed system and provide bureau facilities to external users.

SYSTEMS ANALYST ... c £7250

An experienced Systems Analyst is required to design and successfully implement a fully integrated accounting system to be used by the entire group, and new companies, as they are acquired. Candidates should be able to offer the experience of at least one system implementation and a general commercial awareness.

PROGRAMMERS c £6250

Opportunities exist for at least two programmers to join a small professional team and contribute to the development of a variety of commercial projects. Successful applicants will have at least eighteen months' business experience gained in either a mini or small range mainframe environment.

As the Computer Services Division is at an early stage of development, opportunities for career progression are outstanding and are geared to personal achievements and individual ambition.

Ref. N1/0305

MYRIAD APPOINTMENTS LIMITED

30 Fleet Street London EC4Y 1AA

01-353 0981 (24 HOURS)

MAJOR AMERICAN BANK

COMPUTER/COMMUNICATIONS NETWORK SOFTWARE

This

SENIOR SYSTEMS ANALYST

position requires an expertise in ON-LINE APPLICATIONS SYSTEMS AND TELECOMMUNICATIONS SOFTWARE with emphasis on IBM TCAM / CICS / DOSVS access methods with DEC teleprocessing systems desirable. Knowledge of message switching and line protocol software is also desirable as is the ability to analyse and specify network processing and interface software.

The individual will participate in a study effort of functional analysis and specifications for an internal/external communications network.

The FRINGE BENEFITS consist of a competitive basic salary commensurate with experience, profit sharing, free lunches, interest-free Season Ticket Loans, House Purchase Loans and Non-contributory Pension Scheme, Spouses and Orphans Benefit, Life Assurance, Salary Continuance in Ill Health and B.U.P.A. Scheme.

Interested Parties should apply in writing to Box No. RD5210, Extel Recruitment, 4 Bouverie Street, London, E.C.4 with full details of their age, education, experience and current earnings. The names of any Banks to whom they would not wish their application forwarded should be clearly printed on the back of the envelope and the Client Company will contact those applicants whom it wishes to interview within one week of receiving their application.

1900/2904
COBOL/TABN
WILTS
£210 p.w.
01-262 2251

COBOL
GII +
TABN /
MAXIMOP
C. LONDON
£210 p.w.
01-262 2251

2903
RPG II
SURREY
c £220 p.w.
01-262 2251

Computerised Windmills?

As our Dutch client remarked:

"Had such a need existed, we would have pioneered its implementation. As innovators, this pioneering is one of the things distinguishing us from those companies who claim to compete. We have imitators of course in the specialist fields of Mini & Micro based systems, process control, message switching and computer based communications networks, and this imitation is the sincerest form of flattery we receive".

If you are a graduate (or equivalent) in computing or a related subject, and if you have demonstrable experience of programming Mini/Micro based systems and would like to work in a first class environment in Holland then phone us today. Depending on qualifications and experience expect to talk in the salary range of:

£9 - 14K



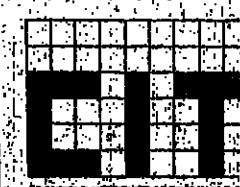
Avon House, 360 Oxford St., London. WIN 9HA.
Tel: 01-491 4636 Telex: 28800 Lond G.

ROYAL MILITARY COLLEGE OF SCIENCE COLLEGE OF SCIENCE SHRIVENHAM, SWINDON, WILTSHIRE VACANCIES IN OPERATIONAL RESEARCH

The Operational Research Branch of the College has a limited number of vacant research posts at Senior Research Scientist / Higher Research Scientist / Research Scientist level. Successful candidates will join small multi-disciplinary research teams working on problems of current interest to the Ministry of Defence and other Government Departments. An interest in computer simulation/scientific programming or scientific gaming is desirable for some posts but an essential requirement is that candidates should have a broad and enquiring outlook. Appointment at Senior Research Scientist level requires experience in practical OR, preferably in the application of OR to military problems, plus an ability to lead a research team. Applicants should have a good first degree in any scientific or engineering subject for this grade. Appointments will be for a 2 or 3-year period in the grade of Senior Research Scientist (4 years post degree experience minimum), salary scale £8154-£26038 p.a. (Higher Research Scientist 2 years post graduate experience minimum), salary scale £4101-£5448 p.a. / Research Scientist, salary scale £2839-£4155 p.a. depending upon qualifications and experience. Applications and further information from the Civilian Admin. Office, Royal Military College of Science, Shrivenham, Swindon, Wiltshire SN6 6LA. Telephone 0793-782581 extension 225. Applications close 25 May 1979.

Senior Operator / Shift Leader

required in the Computer Centre which operates a '128K' ICL 1903T with EDS 80s, a GEC 2050 RJE, and a GEC 4070 interactive computer. The Centre is run on a 2/3 shift basis using parallel George 2 streams and ICL maximop. Preference will be given to candidates with ICL 1900 operating experience. Salary according to qualifications and experience within scale £3,894 to £4,629 p.a. (Senior Operator); or £4,180 to £4,878 p.a. (Shift Leader). These salaries, which will be reviewed in July 1979 for cost of living increase, are inclusive of shift allowance. Generous Holidays and sick pay scheme. Local Government superannuation.



Application form from:
Employment Office
Civilian Institute
of Technology
Griffiths
Bedford MK43 0AL

OS EXPERIENCE? then consider SENIOR PRODUCTION CONTROLLER in Croydon to £6,000

Are you currently a senior operator, shift leader or production controller with two years experience of working in an IBM 370 OS environment?

Then if so, here is the ideal off-shift position for you.

A leading International software house based in Croydon wish to recruit a further member for their Production Control team. The work will be varied and interesting, involving client liaison, control of input/output and writing/amending OS JCL.

You will have a good OS JCL knowledge coupled with a sound business appreciation and a mature and responsible attitude. In return our clients will offer you varied career paths, and as one would expect from a major company, first class benefits, including Sports and Social club with heated swimming pool.

This is an urgent requirement so telephone REX SCOOONES at Capp Associates Croydon office NOW.

Positions open to male & female applicants, please telephone (24 hour service) for initial discussion or write to address below. QUOTE REF. CW 132-9S

CAPP ASSOCIATES  **01-686 9693**
LONDON AND MANCHESTER

GLASGOW COLLEGE of TECHNOLOGY

The Glasgow College of Technology, a major polytechnic institution of higher education, invites applications for the following post.

LECTURER 'A'

SYSTEMS ANALYSIS & DESIGN OR COMPUTER SCIENCE

A vacancy presently exists for a computing professional to join the staff of the Department of Computer Studies and make a significant contribution to the teaching and further development of his/her specialism at higher

diploma and degree level. Applicants should be suitably qualified and experienced graduates specialising in either Systems Analysis and Design or Computer Science.

SALARY SCALE:

LECTURER 'A' £4028-£7110 Bar-£7838

Placing on the salary scale will be according to relevant experience

Technology, Cowcaddens Road, Glasgow G4 0BA.

Application forms and further particulars can be obtained from the Establishments Officer, Glasgow College of

Application forms should be returned within 14 days of the appearance of this advertisement.

Edward Miller, Director of Education
STRATHCLYDE REGIONAL COUNCIL

**Strathclyde
Department
of Education**

BRIGHTON POLYTECHNIC

DEPARTMENT OF COMPUTING AND CYBERNETICS

LECTURER II/ SENIOR LECTURER

(two posts)

(Post 1) in Computer Science with particular interest in Programming Languages

(Post 2) in Computer Science with particular interest in Databases.

Salary scales Senior Lecturer, £8,051 - £7,572
Lecturer II, £4,101 - £6,558.

For further details and application forms please apply to the Personnel Officer, Brighton Polytechnic, Moulsecombs, Brighton BN2 4GL. Tel. (0273) 893866. Ext. 2537. Closing date, 14 May, 1979.

THE UNIVERSITY OF LEEDS

DEPARTMENT OF
SURGERY
(LEADS GENERAL
INFIRMARY)

Applications are invited for suitably qualified candidates for a temporary post of COMPUTING ASSISTANT in the above Department, to assist in the analysis of studies of malnutrition in surgical patients. Familiarity with SPSS would be an advantage. The appointment will be made for a fixed period of one year.

Starting salary in the range £3,384-£3,834 on the 18 Grade for Other Related Staff under review with effect from 1 October, 1979.

Informal enquiries may be made in the first instance to Mr. G.L. 198, University Department of Surgery, Leeds General Infirmary, Leeds LS2 9QL.

Application forms and further particulars may be obtained from the Personnel Officer, The University, Leeds LS2 9JT, quoting reference number 109/14/42. Closing date for applications 25 May, 1979.

SHEFFIELD CITY POLYTECHNIC DEPARTMENT OF COMPUTER STUDIES

PRINCIPAL LECTURER IN DATA PROCESSING

Salary Scale £7047-£7815 (Bar) - £8845

Applications are invited for this senior post in a young and vigorous department which has a strong academic base.

As well as teaching data processing on a wide range of diploma and degree courses the successful candidate will be required to take academic responsibility for the development and delivery of case studies which have an important role in the teaching of data processing. Good opportunities exist for staff development.

Requests for an application form in writing only please to the Recruitment Section of the Personnel Department, Sheffield City Polytechnic, (Rt. C.V.), Halford House, Foulton Square, Sheffield S1 2BB. Completed forms to be returned by 18th May, 1979.

COBOL OS

N. LONDON
£210 p.w.

01-262 2251

KENT COUNTY COUNCIL EDUCATION DEPARTMENT WEST KENT COLLEGE OF FURTHER EDUCATION DEPARTMENT OF SCIENCE & TECHNOLOGY

LECTURER GRADE I

required from 1st September, 1979, to teach Computer Studies. Further details and application form available from the Chief Administrative Officer, West Kent College of F.E., Brook Street, Tonbridge, Kent.

ANALYST 1900 TPS

CITY
£220 p.w.

01-262 2251

LEAD SYSTEMS ANALYST

£5,600+

West Sussex

We have a vacancy for a Lead Systems Analyst and are looking for someone who has:

- at least 3 years' Data Processing experience
- a good commercial systems background
- implemented at least one major system.

The successful candidate will join a team of Analysts and Programmers who are currently engaged in developing new and replacement screen-based systems for our Manufacturing, Medical and Marketing functions. We are installing a SYSTEM 38 next year and envisage making extensive use of package solutions such as MAPICS.

In addition to the starting salary quoted above, we offer an attractive range of benefits including:

- * Four weeks' holiday
- * Pension scheme
- * Guaranteed Christmas Bonus
- * Assistance with relocation costs where applicable.
- * Flexible working hours
- * Free life assurance
- * Subsidised health insurance

Ciba-Geigy Pharmaceuticals Division is engaged in the manufacture and marketing of a wide range of pharmaceutical specialities derived from original research conducted on an international basis.

To apply for this position, please write giving brief details of qualifications and experience to:

Mr. J. Dalziel, Horsham Personnel Manager,
Ciba-Geigy Pharmaceuticals Division,
Wimblehurst Road, Horsham, West Sussex, RH12 4AB.

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Levi's

seeks for Brussels

A METHODS AND PROCEDURES ANALYST

- experienced to develop a new computer system. Primary orientation will be towards the preparation of computer systems user guides and procedure guides and the training of users.
- knowledge of other languages is an asset.

Good salary to start with.

Write with references and photography to KEYSER SELECTION, avenue Brugmann 304, 1180 Brussels, Tel.: 345.88.56 / 344.22.88.

GALLAHER LIMITED

HAVE THE FOLLOWING COMPUTER VACANCY

H 66 COMPUTER OPERATOR

Gallaher Limited one of the largest tobacco manufacturers in the U.K. require a Computer Operator to work at their computer installation in Northolt.

Aged 18 years plus. To operate H86 and associated computing/off-line equipment. Applicants should have relevant operating experience in a large scale computer environment (H86/6000 experience an advantage).

Hours of work are on a 3 shift system. Starting salary at 20 years is £5131 per annum inclusive of shift allowances and productivity payment. (Due for revision July 1979). Conditions of employment include 20 days' annual holiday and bonus paid at Christmas and a good contributory pension.

For further details please contact: Personnel Department, Gallaher Ltd., Rowdell Road, Northolt, Middlesex. Tel: 01-845 2386.

OPERATOR/PROGRAMMER BURROUGHS B700

C.London

£8000

A manufacturing company is currently recruiting a key member for the D.P. department. The requirement is for an unusual mixture of operating and programming with the emphasis on operating.

Applicants should be aged 25 or over and have a minimum of 3 years within D.P. experience on Burroughs hardware is obviously advantageous but applicants with similar hardware will be considered. A working knowledge of COBOL is essential as part of the job will involve maintenance programming.

As well as an attractive salary the company also offers Christmas Bonus, Profit Share, Non-contributory Pension Scheme, Luncheon Vouchers for £2 per week and Season Ticket Loans. The working hours for this post are 9-5 within excellent working conditions.

Call 01-439 7871

Reference SO 18/1

IBM + ICL MAINFRAMES

IBM 370 OS £4600
City based financial organisation requires Operators with 1 yr + experience. Good prospects and perks inc. Mortgage Allowance.

IBM 370 OS/DOS £4500
Vacancies exist in all areas for Operators with 6 mths + experience in a variety of installations offering a wide range of benefits.

IBM 370 DOS £4700
East London installation seeks Operators with around 1 year's experience.

ICL 1900 £4700
Senior Operator required by large 1800 alts currently converting to 2800. Good knowledge of GII essential.

ICL 1900 £4800
Operator with 1 yr + experience for city based company. Opportunity to learn New Hardware.

ICL 1900 £4200
6 mths + experience on any ICL equipment required by large bureau. Excellent career prospects include moving to Programming in the future.

DATA CONTROLLERS URGENTLY REQUIRED IN ALL AREAS SALARIES £3000-£8000

PROGRAMMERS to train as ANALYSTS London/Essex Border c£8000

A large manufacturing Company operating a Honeywell installation is seeking programmers to develop into analysts work, eventually to be responsible for junior staff.

The minimum experience required is two years COBOL preferably gained in a Honeywell environment although this is not essential.

The Company offers a very attractive salary together with the usual fringe benefits. Reference BP 18/3

SYSTEMS ANALYST

C.London

to £7800

A large Company operating an ICL 2800 installation is seeking a Systems Analyst who feels limited in his present environment and would like to develop his career.

The individual they are seeking will have a minimum of four years Data Processing experience with two years as a Systems Analyst, and possibly a programming background.

The Company offers a very good salary plus some very attractive fringe benefits, one would expect with a Company of this size.

01-439 7871

Reference BP 18/4

Datascene Recruitment Ltd.

Sceptre House,
169-173 Regent Street
London W1R 7FB

01-439 7871

OPERATIONS SUPPORT

Sidcup

to £5000

A large International Organisation based in an easily accessible part of N.W. Kent is currently looking for staff at various levels for their expanding technical support department. A minimum of 1 years operating or data control experience is required, preferably with some IBM OS JCL knowledge, although this is not essential.

The installation is linked via a Data 100 network to a large 370/158 running under OS/VS1. The technical support department operates a flexitime system and therefore this is an ideal opportunity for operators to move from shift work into an interesting and demanding days only position.

There is a recognised company career path which includes the possibility of moving into programming in the future. Excellent staff benefits include discount on a wide range of products, staff restaurant, and an active sports and social club, one of the amenities being a swimming pool on site.

01-439 7871

Reference MH 18/5

CONTRACTS

TELECOMMUNICATIONS - PARIS DESIGN CONSULTANT

WE ARE CURRENTLY SEEKING SOMEONE WITH AN UNDERSTANDING OF BINARY SYNCHRONOUS PROTOCOL, TO DESIGN AND PRODUCE PROGRAM SPECIFICATIONS FOR A SIMULATOR FOR IBM 3270 TERMINALS TO RUN ON A MINI COMPUTER. KNOWLEDGE OF ANY ASSEMBLER WILL BE ACCEPTABLE AS TRAINING WILL BE GIVEN ON THE MINI.

THE CONTRACT IS ANTICIPATED TO RUN FOR UP TO TWO YEARS, PAYING A PACKAGE OF BETWEEN £400 & £600/WEEK

PROGRAMMERS - BASIC+/BASIC+2

NUMEROUS ASSIGNMENTS NOW AVAILABLE IN THE CITY, THE WEST END, THE HOME COUNTIES AND ON THE SOUTH COAST FOR PROGRAMMERS ABLE TO DEMONSTRATE A COMPETENT UNDERSTANDING OF PDP 11 SYSTEMS.

CALL

BOB EDWARDS

TELEX 25851 01.439.1856

BASIC + 2 PROGRAMMERS

Central London

to c£9K

A leading Software House are currently seeking BASIC +2 Programmers with a minimum of 12 months' experience to work on their Dec Projects.

Reference HK 18/6

SYSTEMS ANALYST

North London

to c£8.5K

The bureaux side of an International Company are currently seeking a Systems Analyst with a knowledge of the engineering field. An added advantage would be a knowledge of Fortran.

Reference HK 18/7

CORAL 66 PROGRAMMERS

Central London

to c£7K

An International Company in the retail trade are currently seeking a Coral 66 Analyst Programmer to work on their Database system.

01-439 7871

Reference HK 18/8

IBM SYS 3 OPERATOR

N.W.London

c£5000

W.E.A. Records, a leading company in the entertainment industry, are seeking to recruit an experienced IBM SYS 3 operator. Applicants should have a minimum of 2 years operating experience including a good understanding of OCL and utilities.

The present configuration consists of 2 X IBM SYS 3/16D's running under CCP, and experience of this particular model and software would be advantageous, although not essential.

2 shifts are in operation covering the hours 07.00 - 21.00, 6 days a week, and there are opportunities for overtime, enabling operators to earn in excess of £5000 p.a.

The successful applicant will enjoy 4 weeks holidays, staff canteen and other usual large company benefits and of course an excellent discount on records and tapes.

01-439 7871

Reference MH 18/9

ALL OTHER MAINFRAMES

HONEYWELL GCOS £4600
Minimum of one year's experience for senior operator. Prospects include opportunity to move into programming.

HONEYWELL GCOS £4600
North London company is looking for an operator with a minimum of 6 months' experience on Honeywell Level 88. This post is a 2 shift system with no nights.

UNIVAC OS3 £4600
Applicants should have 9 months' experience of 90/30 range for a two shift job (no nights) in West London. Good company discounts apply.

DEC PDP 11/45 £4600
Applicants with a minimum of two years' DEC experience and aged 24, or over, are needed for assistant supervisor for a Merchant Bank. Only two shifts and standard Bank perks apply.

BURROUGHS B1800/MCP £3750
Essex alts is looking for a Burroughs operator with 6 months' experience for days only position. Perks include discounts on interesting company products and programming involvement.

DATA CONTROLLERS URGENTLY REQUIRED IN ALL AREAS SALARIES £3000-£8000

RPG 11 PROGRAMMERS

City to c£8000 + Mortgage

A large International bank urgently requires two capable RPG 11 Programmers to work on a whole range of financial applications on their IBM SYSTEM 34. All you will need is around 12 MONTHS' RPG 11 experience.

The appointments will offer good career opportunities and future exposure to Systems Analysis, as well as a Non-Contributory pension. Season Ticket loans and a 3% Mortgage. Reference BP 18/11

JUNIOR COBOL PROGRAMMERS

C. London to c£6000

A large International Company operating a number of installations throughout the world is seeking several junior programmers to work in their London headquarters. The Company operates a large IBM installation which is continually expanding, and these positions will appeal to people who are looking to considerably expand on their current experience. The minimum experience required is TWELVE MONTHS' COBOL, preferably gained in an IBM environment.

The Company offers a very good salary together with the usual fringe benefits one would expect with a large international Organisation.

01-439 7871

Reference BP 18/12

Datascene International Ltd. Telex: 25851

Sceptre House,
169-173 Regent Street
London W1R 7FB

01-439 1856

SENIOR ANALYST

ISN'T IT TIME YOU USED YOUR SKILLS AGAIN?

One of the problems of being a senior analyst or project leader is that the job can become mundane and work tends to be in areas where you already have the most experience. This is an opportunity to gain a broad range of experience as a.....

COMPUTER AUDITOR — around £9,000 but very negotiable.

This is a new post with a major international organisation and will involve setting up a d.p. audit function throughout Europe. It will be necessary to consider physical, informational and procedural security for IBM 370 and remote batch entry installations. Recommendations will be made after discussions with local management as to the type of considerations necessary.

Responsibility will be held for vetting both operational systems and those under development. Application areas include finance, marketing, manufacturing, technical and MIS. Methods will be established for investigation and control. New techniques and aids will constantly be appraised.

Communication will be at all levels up to top international management and consultancy services will be provided to European audit staff on data processing aspects. It is therefore a very full role offering the challenge and interest of setting things up from scratch and the chance of gaining additional experience within technical and managerial areas whilst gaining an excellent insight into the company's operation.

The successful applicant will have a broad computing background and the positive attitude necessary to get things off the ground and to deal with top management. A good accounting or business appreciation will be very important as total d.p. systems will be evaluated. Although previous audit experience would of course be valuable, specific training will be provided where necessary.

This is an important post within the company and so starting salary will be very negotiable and other major company benefits will of course apply. Clear opportunities for progression exist within d.p. or line management generally. The position will be based in London close to main line and underground services. To find out more telephone our Croydon office.

Positions open to male & female applicants, please telephone (24 hour service) for initial discussion or write to address below. QUOTE REF. CW 125-9H

COMPUTER AND PERSONNEL CONSULTANTS **CAPP ASSOCIATES** LONDON AND MANCHESTER **01-686 9693**

TESSIDE POLYTECHNIC Computer Centre
The Computer Centre provides a computing service for the teaching, research and administrative work of the whole Polytechnic, and has recently installed the first phase of a powerful Univac 1110 computer which will support over 80 terminals and a range of graphics devices. Applications are invited for the following newly created posts.

SENIOR PROGRAMMER/ANALYST (OPERATING SYSTEMS AND COMPILERS)

To join a small team involved in maintaining and enhancing the manufacturer's operating system, EXEC 8, and other systems software. Several years' systems programming experience is essential. Knowledge of EXEC 8 would be advantageous but is not essential.

PROGRAMMER/ANALYST OR SENIOR PROGRAMMER/ANALYST (INFORMATION AND USER SUPPORT)

To join a section concerned with providing documentation, information and training courses for computer users within the Polytechnic. Good computing knowledge and some experience of preparing technical documentation in a computer environment is desirable. Candidates for either post should possess a degree or equivalent qualification. Salaries, according to qualification and experience, will be on the scales:
Programmer/Analyst: £3,420-£4,761 p.a. (AP3-AP5) + £312 supplement.
Senior Programmer/Analyst: £4,920-£5,748 p.a. (S01-S02) + £312 supplement.

Application forms and further particulars may be obtained from: The Registrar, TESSIDE POLYTECHNIC, Borough Road, Middlesbrough, Cleveland TS1 3BA, to whom they should be returned within 14 days of the appearance of this advertisement.

SENIOR COMPUTER ASSISTANT — POST T63

Salary: £4245-£4832 inclusive of supplement

Applications are invited for the above post from experienced operators of ICL hardware running the Council's ICL 2903 (28K 20M FE05, CR LP, IDE under VME) and ICL 2901 (28K 20M FE05, CR LP, IDE under VME) under VME. We are among the leaders in this field of operation. The successful applicant will be responsible for the day-to-day operation of the system and will be required to provide technical support to the staff. The successful applicant will be required to provide technical support to the staff. The successful applicant will be required to provide technical support to the staff.

For job description and application form returnable by 17th May, 1979, please contact the Personnel & Management Services Office, Council Office, 27-35 London Road, Newbury, Berkshire. Telephone: Wokingham 78822, extension 41, quoting reference T63.

WOKINGHAM DISTRICT COUNCIL

Let's make your career SYSTEMS ANALYST (Near Edinburgh)

Let's, a progressive and developing publishing company with its own manufacturing and computer resources, have an excellent opportunity for a Systems Analyst who wishes to develop his/her career. The responsibilities of the post will be to review and develop the methods and procedures currently operating in the company's various Departments with a view to Maximising the contribution these procedures make to the overall effectiveness of each unit and to the company as a whole. Our present situation provides a first class opportunity for a competent young systems person to make a significant contribution to the company's efficiency and at the same time to increase his/her experience and future career prospects. Ideally applicants should be systems preferably in an industrial/manufacturing environment. An O & M background with a strong systems bias is also likely to be suitable. An essential requirement however is the possession of interpersonal skill to deal effectively with employees at all levels in the organisation.

The right candidate will be offered a very attractive remuneration package and conditions of employment. Relocation expenses where appropriate will be paid. Please write or telephone for an application form to:
Letts The Personnel Manager
Letts Andersons Limited
Thornbank Industrial Estate
Dalkeith, Midlothian
Tel: 031-863 1871

SALESMEN

Versatec, world leaders in Electrostatic Printing and Plotting invite men or women to join the team to expand the large base of units already operational in the UK.

Versatec has been established in this country for over 8 years and has many hundred installed units. Versatec units are used by Scientists, Engineers, Designers to help speed their work.

We are looking for:

GRAPHIC SALESMEN/SCIENTIFIC SALESMEN

Salary £8,000 basic + Incentives (£3k on target) + car + fringe benefits.

For further details contact:

Bill Boffin

VERSATEC

(A Xerox Company)
27-35 London Road, Newbury, Berkshire
Tel: Newbury (0635) 42421

061-941 4509 &
061-928 5255

£150-£300 per week
(plus extra expenses where appropriate)

CICS/DLI, Vienna 3 months +
IBM Assembler, Merseyside 4 months
1900-2972 COBOL Conversion

3 months +
Junior Analysts, Greater Mchtr 6 months
Senior Analyst, Greater Mchtr 3 months
CICS/COBOL, Lancs. 3 months
Mark IV, London 6 months +
Mini Men for Turnkey work.

Phone RON VIPOND NOW

COMBYTE SERVICES LIMITED
11 STAMFORD HOUSE
STAMFORD NEW ROAD
ALTRINCHAM
WA14 1BL
LICENCE No. NW419

OPERATIONS SUPPORT OFFICER UP TO £5,850 KINGSTON UPON THAMES

THE JOB

- Design, co-ordinate and document the development of the communications network
- Liaise with the Post Office, terminal suppliers, users and other SCC computer staff.
- Implement and co-ordinate network fault diagnosis procedures.
- Assist with the cutover and maintenance of a wide variety of applications.

YOUR FUTURE

We've started a comprehensive expansion programme — in hardware, systems, staff and new accommodation — WHY NOT EXPAND YOUR CAREER WITH US?

OTHER BENEFITS

Wide range of relocation allowances; flexible working hours; restaurants; free car parking; staff club and recreational facilities.

If you have a minimum of 2 years' detailed involvement with the design and day-to-day management of a communications network in an operations environment and are interested, please phone or write (with cv) to Phil Wilde, Computer Services Division, County Hall, Kingston upon Thames KT1 2DN, 01-548 1050, ext. 3370/3371.

SURREY COUNTY COUNCIL

TEAM LEADER
OS COBOL
S. LONDON
£240 p.w.
01-262 2251

Sept. '78 I came back from Australia broke. Now I've a Rolls on order. My income is 4 figs per month. Dreams? No? You can do it too.
KING BARRY NOVIS
01-438 1748

THE UNIVERSITY OF SHEFFIELD
LIBRARY
POSTAL ASSISTANT
LIBRARIAN
(Automation) Grade HA

Applications are invited from suitably qualified men and women graduates for the above post vacant from 1 July 1979. Candidates should have some experience of automated library systems in academic libraries, and preferably some demonstrable aptitude for programming and systems work. The duties will include some responsibility for the established Sheffield Co-operative List of Serials, and for new developments in the area of Acquisition. In collaboration with the Automation Officer (Dr. B. Chapple), initial salary range £3852-£5251 (1st Grade) with a target of £7764 a year. Particulars from the Registrar and Secretary, the University, Sheffield S10 2TN to whom applications (with cv) should be sent by 14 May, 1979. Date of interview: 16 May 1979.

COBOL
OS
BERKS
£220 p.w.
01-262 2251

GRADUATE
University Graduate
Training Scheme
Library
SALARY £2200
01-262 2251

Sales Executives

(Computer Systems)

Income c £12,000 p.a. plus car plus benefits

London based

We are retained by a highly successful and profitable corporation, who have through their diverse range of products penetrated into many market activities associated to the computer industry. Their latest division has launched a new dimension of Computer Related Systems, with a product being keenly priced and with superb performance, capable of operating as a stand alone system or as a Communications Processor. This audio/visual system opens new paths of information exchange, which can be entered and requested from remote locations. The applications are many and varied but at present marketing efforts are concentrated in the commercially defined areas of Credit Authorisation, Reservations Financial Transactions, Sales Order Entry; where there is a growing and eagerly awaiting market place, and broader markets exist.

Owing to the growth of this operation, outstanding opportunity to progress exists where the company believe in rewarding effort and where substantial financial packages are achieved through having direct technical support, backed by strategic plans meaning that realistic sales quotas are readily exceeded.

To qualify you should be a self motivated, successful sales executive, currently operating in the computer field and ideally should be an ambitious professional with the determination to succeed, who is actively seeking an opportunity to significantly contribute to a small but growing sales team.

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The wide range of activities encompassed by the work will undoubtedly surprise you. You will also be interested in your training and career development. To find out the answers and much more about the varied and interesting life as a recruitment consultant, contact us to arrange an informal discussion and we will also tell you about the outstanding long-term career opportunities available. Ref. AW1/1503

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PCL and ICS are co-operating under M.A.P. to establish a Microprocessor Education Activity (MPEA).

Engineers or lecturers with experience of Digital or Microelectronics techniques are invited to apply for full positions. All the teaching will be in industry, presented in a short course mode.

Consultancy will be encouraged. Special training courses, both in the UK and the USA, will be available.

Appointments on the Principal Lecturer scale.

Salary: £7521-£8892 (BAM) £8891-£10,000 (BAM) £10,001-£11,000 (BAM) £11,001-£12,000 (BAM) £12,001-£13,000 (BAM) £13,001-£14,000 (BAM) £14,001-£15,000 (BAM) £15,001-£16,000 (BAM) £16,001-£17,000 (BAM) £17,001-£18,000 (BAM) £18,001-£19,000 (BAM) £19,001-£20,000 (BAM) £20,001-£21,000 (BAM) £21,001-£22,000 (BAM) £22,001-£23,000 (BAM) £23,001-£24,000 (BAM) £24,001-£25,000 (BAM) £25,001-£26,000 (BAM) £26,001-£27,000 (BAM) £27,001-£28,000 (BAM) £28,001-£29,000 (BAM) £29,001-£30,000 (BAM) £30,001-£31,000 (BAM) £31,001-£32,000 (BAM) £32,001-£33,000 (BAM) £33,001-£34,000 (BAM) £34,001-£35,000 (BAM) £35,001-£36,000 (BAM) £36,001-£37,000 (BAM) £37,001-£38,000 (BAM) £38,001-£39,000 (BAM) £39,001-£40,000 (BAM) £40,001-£41,000 (BAM) £41,001-£42,000 (BAM) £42,001-£43,000 (BAM) £43,001-£44,000 (BAM) £44,001-£45,000 (BAM) £45,001-£46,000 (BAM) £46,001-£47,000 (BAM) £47,001-£48,000 (BAM) £48,001-£49,000 (BAM) £49,001-£50,000 (BAM) £50,001-£51,000 (BAM) £51,001-£52,000 (BAM) £52,001-£53,000 (BAM) 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KNIGHT PROGRAMMING SUPPORT LIMITED NORTHERN OPPORTUNITIES

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Our client requires programmers with RPGII experience to work on IBM hardware in an expanding installation.
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Our client requires Systems Analysts. Analyst Programmers and Programmers to work on DEC equipment, with Cobol and Coral.
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SYSTEMS ANALYSTS HULL £27000

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A self-financing productivity payment is offered. Cobol Programmers are required to work on ICL hardware in a rapidly expanding installation.
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A subsidised mortgage is offered to successful applicants. IBM hardware, installing new systems in a nationwide teleprocessing network.
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Our client requires experienced Systems Analysts to work on ICL hardware. Benefits comparable with any large company offered.
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Our client is in need of an Analyst Programmer to work on IBM hardware in a financial environment.
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143/4 ROYAL EXCHANGE BUILDINGS, MANCHESTER M2 6BQ
061-833 9341/5 (24 HRS.)
DATA PROCESSING RECRUITMENT SPECIALISTS

British Waterways Board

Computer Centre Wembley

We are currently involved with 24 Computer Applications, encompassing the many and varied interests of the Board. They range from Water Control to Warehousing, Plant Utilisation to Craft Licensing, as well as the normal Payroll, Ledgers, etc.

We have outgrown our present configuration, which is now being replaced with the new Burroughs "B2800" series of Computers.

This exciting new development will enable us to develop a terminal network to cover all our administrative centres in England and Scotland. The network will be channelled through a front-end processor linked to the main frame, which will also multi-program our existing batch work, in single shift working.

Applications are therefore invited for the following posts:

Senior Analyst/ Programmer (Cobol)

(Salary range £6515-£6893 p.a.)

Analyst/ Programmer (Cobol)

(Salary Range £5682-£6893 p.a.)

These are senior posts within the Board's organisation and applications should state full details of all previous experience in the computer field.

Apply to: Principal Personnel Officer, British Waterways Board, Willow Grange, Church Road, Watford, Herts. WD1 3QA

Computer Operator

£5,100 (incl. shift allowance)

A vacancy has arisen at our Prescot Centre on Merseyside for an experienced Computer Operator (male or female) with a minimum of 18 months experience on ICL 1900 equipment, George III knowledge preferred.

The department operates a 3 shift system using a 256K 1904 S equipped with direct access and on-line George III data communications facilities. Conditions are attractive and commensurate with a large multi-national company.

The above salary is currently under review. Please apply in writing to:

Mr. L. Barker,
Personnel Services Manager,
Central Departments,
BICC Limited,
P.O. Box 1, Prescot,
Merseyside, L34 5SZ.

BICC

ICL Computer Operators

Enfield £3,700-£5,700
including shift allowance

- * ICL 1900's
- * IBM 360
- * ICL 2900's
- * Communications

For operators with ICL experience, this is a chance to widen your skills in a whole range of hardware and software. We have the equipment, the training commitment and the opportunities to increase your experience significantly.

Our existing installation in Enfield comprises an ICL 2972/VMEB system due for enhancement to a dual 2972, three large ICL 1900 mainframes and an IBM 360 system. The installation lies at the centre of an extensive communications network covering East Anglia.

As we expand our operations to cover the transfer from 1900 to 2900 work we will require more operators; preference will be given to trained operators with a minimum of two years experience on ICL 1900 systems.

The salary will depend on your experience and will be within the range of £3300-£5000 p.a. plus 17% shift allowance on basic pay. Benefits include subsidised restaurant, 4 weeks holiday p.a., pension and sickness schemes, sports and social facilities etc.

These positions are open to both male and female applicants.

Application forms can be obtained from:

The Personnel Officer,
Eastern Gas, Tower Point,
Sydney Road, Enfield,
Middlesex.
Tel: 01-366 1234
ext. 227 or 402.

EASTERN GAS

SYSTEMS MANAGER Godfrey Davis (London) Ltd.

We are planning to install at Alorton, Middlesex, a Hewlett Packard 3000 (111) with image data-base during the current year and we require a Hands-On System Manager to be involved with the packages and assist in the set up of the Data Base structure.

The initial systems will be custom written by a software house and phase 2 and 3 will include the connection of remote terminals to our other main dealerships.

We are looking for an enthusiastic and competent computer professional with good Cobol and basic experience to be directly responsible to the Group Computer Services Manager.

For further particulars ring Mr. J. S. Cooke on 01-950 2759

Godfrey Davis

UNUSUAL OPPORTUNITY for top-class ICL 2903/4 and System 10

SYSTEMS ANALYSTS AND PROGRAMMERS

to participate in a British profit-sharing partnership enterprise working in Germany.

- High potential job satisfaction from self-determining life-style
- High financial rewards with no ceiling
- Expenses
- Security
- Other benefits

Knowledge of German or willingness to learn very advantageous.
To find out more ring or write:

P. F. Tischer, Managing Director
CAPITAL CITIES PERSONNEL
LIMITED
Assets House, Elvorton Street,
London, SW1P 2QH. Tel: 01-834 9171

Software Programmer

To £6,000 p.a.
West Country

The Software section of the Technical Services Department, based at Taunton, Somerset have an immediate vacancy for a Software Programmer.

The department provides advice, assistance and data to senior management and other departments on all aspects of data processing; the Software section researches all the available languages and operating systems on Debenhams current range of equipment (ICL 1501's, 1903T, 1904S and CMC Reality).

Applicants should have a number of years of experience on any or all of these machines in at least one high and one low level language.

Please write or telephone for an application form, a copy of the job description and further details quoting ref BH/12 to:

Personnel Administration Manager,
Debenhams Computer and
Administration Centre, Park Street,
Taunton, Somerset. Telephone:
Taunton 87979 ext 385.

Debenhams

Systems Design and Development

Major New Hardware Investment

West of London

Our client is the European division of a successful manufacturing company. Currently they are involved in substantial hardware investment, complemented by extensive new systems development to exploit the potential of their planned computer complex. When complete, they will have an integrated European network of distributed processing. Conceptually their approach is unusual and forward-thinking. This development is centred in a pleasant semi-rural location about 40 miles west of London.

They now wish to add a Project Leader and two Systems Analysts to their development team. Working in a highly professional environment, the successful individuals will be involved initially on aspects of complex sales and inventory systems, to be implemented throughout Europe.

European Travel

Project Leader

package to £8000

Ideal candidates will be graduates with at least four years analysis experience gained in a successful large company. Strong exposure to modern management techniques is essential together with an appreciation of programming, although formal training in this area is not a requirement. Project control experience is desirable together with the ability to lead a small group of ambitious, enthusiastic individuals.

Systems Analyst

to £6000

Candidates should be on the same career path as described in the requirements above, but at an earlier stage. The quality of the experience you have received will be of far greater importance than the quantity. Ambition and dedication together with an open-minded approach to problem solving, are essential qualities required.

These positions represent excellent 'ground floor' opportunities to play significant roles in one of Europe's most advanced data processing complexes, whilst perhaps enhancing your personal quality of life in an area renowned for good housing, schools and recreational facilities. Because of the nature of these positions requiring frequent contact with users at all levels throughout Europe, successful candidates can expect several short European trips per year.

The company has a policy of commitment to training, and suitable courses will be provided, both internally and externally. The benefits package is in line with a major international company and includes relocation assistance where appropriate.

To apply, or for further information, please contact Peter Williamson quoting Reference 1949. Either telephone or write to the address below or telephone his home number, Gravesend (0474) 50342 between 8 and 10pm in the evening or at the weekend.

Lloyd Chapman Associates

123, New Bond Street London W1Y0HR 01-408 1670

RSX Programmers Circa. £6,500 pa

Citibank NA, one of the world's largest international banks, is looking for two programmers to join their Operations Centre in South East London.

We need people to take responsibility for the development, programming and support of our transaction processing systems: men and women who want the challenge of a highly technical environment, and who can motivate others and put practical ideas to good use.

We currently use 1 megabyte and 5 x 1/4 megabyte PDP 11/70's and are continually revising our hardware and software library to meet the challenging demands of the Bank.

The experience necessary for the positions includes a sound knowledge of RSX11—Macro programming language, and systems experience in a commercial environment.

The salary range is £5,000-£7,500 p.a. A very attractive range of benefits — which will add considerably to your earnings in real terms — includes low-cost mortgage and personal loan plans, non-contributory pension, free restaurant, special Season Ticket loans and 4 weeks' holiday. Lewisham House is a new and fully air-conditioned multi-storey building which is conveniently located near shops and Lewisham BR station.

Applicants should write or telephone: Peter Russell, Systems Manager, Citibank NA, Lewisham House, 25-Molesworth Street, London SE13. Telephone: 01-852 4370 Ext. 3827/3889.

CITIBANK

ARUN DISTRICT COUNCIL SOUTH COAST

Required:

SYSTEMS CONTROLLER

Salary Scale:

£6513-£7230

Equipment:

Honeywell 82/40 Disc and Tape (178K).

Responsibilities:

- * Management of the Program Development Section, comprising Systems Analyst, Analyst Programmer, and two Trainee Programmers
- * Progress monitoring of Management Team development schedules
- * Provide system specifications for future developments
- * Develop software systems and advise on use of software
- * Report to the Computer Services Officer

Location:

A new Computer Suite in Littlehampton, West Sussex, an area which offers many sporting, cultural and leisure pursuits.

If you have proven Systems Analysis, COBOL programming and JCL experience on major projects, and even better experience of Honeywell Series 80 Level 62, why not apply to the Management Officer, Council Offices, Church St., Littlehampton, Telephone: Littlehampton 81332 ext 318, for an application form and job description. Closing date: 31st May, 1979.

We've made things easy for you!

If you're chasing a new job or a new contract, save time by filling in your application form here and now.

Personal Please write in ballpoint, using block capitals.

Surname _____ Forenames _____

Address _____

Tel. Home _____ Office (discretion will be used) _____

Age _____ Place of Birth _____ Car? _____

Are you prepared to relocate? _____ UK/Abroad (delete) _____

Experience Place no. of yrs. in box, e.g. IBM 360/370 **4**

Machines: Please specify model. Applications

IBM 360/370	Commercial
IBM others (specify)	Financial
ICL 1900/2900	Payroll
ICL others (specify)	Production control
Honeywell	Stock control
Univac	Scientific
Burroughs	Realtime
PDP	Software
Other mainframes (specify)	Database
	Message switching
	Communications
Other mini-computers (specify)	Data transmission
	Central process
	Teleprocessing
	MIS*/CPA*/PERT*
	Magnetic tape
	Dist
	Others (specify)

Languages

Cobol	
Plan	
Assembler	
PL/I	
Fortran	
Filetab	
RPG11	
Auto*/Jesys*/user code*	
Others (specify)	

Job Titles

Project leader	
Systems analyst	
Systems engineer	
Analyst/programmer	
Systems programmer	
Programmer	
Operations supervisor	
Operator	
Consultant	
Sales representative	
Others (specify)	

Operating Systems

DOS	
OS	
George (specify)	
CICS*/JAS*/GRASP*	
DBOMP*/MVT*/IMS*/CMS*	
Others (specify)	

* Delete where inapplicable

Position sought Please state briefly the type of appointment you are seeking.

Minimum salary £ _____ Notice required/Date available _____

Signed _____ Date _____

Cut out the whole advertisement and post to the address below.



Knight Computer Services Limited

Staff Services Division of BCC Data Services Group and a member of Computing Services Association

Knight Computer Services Limited, 14 Old Park Lane, London W1Y 4NL

01-491 4706

or when busy 01-439 3411

John H. Jones

Programmers**Up to £14,000 P.A.****Munich**

The Company is a leading plastics manufacturer with production plants throughout Europe (Germany, Holland, Belgium and Italy). The group employs circa 2,500 personnel and is affiliated to a major chemicals organisation.

The System will be enhanced by the arrival of an IBM 4331/1 megabyte machine scheduled for installation in September '79.

The current hardware consists of a 370/125 512k under DOS/VS utilising DBOMP, DL/1, VSAM and CICS are used for various on-line and batch systems. The 370 and the 4331 will be replaced by a 4341/2 megabyte in 1981.

These appointments require experienced organisation programmers with IBM Assembler on 370s. On-line expertise would prove most useful and some PL/1 or DL/1 would be a plus point. A basic knowledge of German is essential.

For further details concerning these appointments, please contact Eddie Howard

REAL TIME PROGRAMMERS**UK & OVERSEAS — £ DEPENDENT ON LOCATION**

Take advantage of our position as one of the leading recruitment specialists in the field of scientific programming. Today, more than ever, there is a demand for highly skilled personnel with the ability to tackle wide ranging projects in the design and development of scientific computer systems. If you hold a degree in a scientific discipline or have relevant practical experience of real time mini computer systems, using either ASSEMBLER, BASIC + MACRO 11, CORAL or FORTRAN, then give us a ring quoting ref. CW237.

TECHNICAL SUPPORT PROGRAMMERS**£6-£7,500 + LONDON AND THE SOUTH**

You will play a very important front role assisting the sales team of a large international organisation. Responsibilities and duties will necessitate working on client premises periodically, ascertaining and compiling technical specifications and will assist the sales force to successfully accomplish their tasks. Applicants must possess a good commercial D.P. background along with a pleasing and helpful attitude.

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Edmund Howard & Partners

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Computer Personnel Consultants**D.P. PROFESSIONALS****LONDON**

This fast growing software house based in central London with offices overseas is recruiting all areas of D.P. staff. They urgently need experienced professionals to join existing projects or to manage new ones. The right candidates for the Project Leader's position will have had at least 4 years' programming experience, be used to client liaison at all levels and be able to supervise programming staff. Programmers and Senior Programmers should have on-line experience, written user documentation and some familiarity with working on mini computers. We also have requirements for IBM mini RPGII programmers to be based in North London but working on client sites in the City.

NEGOTIABLE

Ref: 17/1

TECHNICAL SUPPORT**CITY****to £7,500 +**

Our clients, who are based in the City, require technical support staff with experience of PL1 and preferably with knowledge of CICS, IMS, OS/VS/DL1. The work is mainly on financial applications supporting a T.P. network of 90 terminals. The company offers excellent conditions of employment.

Ref: 17/2

ANALYST/PROGRAMMERS**GERMANY****from £10,000 +**

Our clients in Germany have retained Informatix to assist in the recruitment of their permanent D.P. staff. The prime requisites are 2 years' + programming experience with indepth knowledge of COBOL on IMS DOS or on ICL 1900 with GEORGE II+. Initial interviews will be held in London during May.

Ref: 17/3

INFORMATIX UNITED KINGDOM AND OVERSEAS INDEX**Haven Informatix Limited**

24 Grays Inn Road London WC1X 8HR Telephone 01-831 6055 Telex 299539 HAVEN G

CAPP ASSOCIATES group provides permanent and contract recruitment services to clients and applicants

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Responsibility will be in the area of enhancing, maintaining and installing packages for business systems already developed on a corporate basis. New sub-systems and programs for teleprocessing links with Regional Centres may also be needed. Skills required are as follows:

- ★ A good basic education
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- ★ Minimum 4 years' analysis and COBOL programming experience
- ★ Experience of NCR Hardware preferred
- ★ Ability to work with differing levels of staff and nationalities

The requirements offer project leader openings, challenging assignments and opportunities for professional growth.

These positions offer very attractive salaries in a country with a relatively low cost of living and the opportunity to travel widely in both Africa and the Middle East.

Positions open to male & female applicants, please telephone (24 hour service) for initial discussion or write to address below. QUOTE REF.

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COMPUTER PROJECT LEADER**£6513 - £7230 p.a. (under review)**

Post Ref. FIN/CPLI CW

SYSTEMS ANALYST**£5727 - £6080 p.a. (under review)**

Post Ref. FIN/SAI CW

Applications are invited from experienced staff for either of the above posts which result from another of our project leaders moving to the Middle East. Project Leaders rank at third level in our proposed new structure with a personal responsibility for computer advice to a group of user divisions and for conducting costed feasibility studies. Leading a team of 3/4 analysts/programmers (which may be increased later) they will develop new applications in our 5 year plan whilst maintaining existing ones. Systems analysts rank next within a project team. Initial workload will include conversion. All applicants must be able to demonstrate a record of successfully completed projects and should have relevant experience: 5 years for Project Leader, 3 for Systems Analyst. They should also hold a professional qualification or degree. The Council serves a population of 450,000, employs 25,000 and spends a budget of about £100 million. The computer section has 110 staff (35 in Systems/Programming area) and provides a sophisticated bureau service to internal divisions and to schools, using a mainframe, seven minis, all with associated terminal network and micro computers. We are in the process of conversion from a 192K ICL 1904A running 3 shifts under GEORGE II to a 394K Honeywell 66 DPS 100 with GCOS, GENSYS and DMV and an ICL 2904. Assistance with removal expenses may be available. The above salary figures are inclusive of supplement. The above posts are open to both men and women. Application forms are available from the Principal Staffing and Training Officer, Directorate of Finance, Britannia House, Hallings, Bradford BD1 1HX.



City of Bradford Metropolitan Council

Fareham Borough Council

Borough Treasurer's Department**Senior Programmer****Post No. T.47****Salary Grade AP.5 (£4,773 - £5,073 p.a. inclusive)**

Applicants must be experienced COBOL programmers for the key position. The person appointed will be responsible for all programming functions and work includes development of new applications of both on-line and batch systems. The Council's present computer installation, a Honeywell Series 200, is being replaced shortly with a Honeywell Level 84/20 256K, disks and tapes, running under GCOS, with I.O.F. facility and using T.D.S. and I.D.B. The commencing salary will be determined having regard to experience.

100% removal expenses. Up to £500 payable towards legal and estate agents fees plus generous disturbance and separation allowances. Flexible working hours. Temporary housing accommodation may also be available.

For application forms and further details, write to the Personnel and Management Services Officer, Box No. 10, Fareham Borough Council, Olive Way, Fareham, Hants. PO15 7PP (Tel. Fareham 236100, Ext. 232). Closing date for receipt of applications 1 June 1979.

Contract**Programmers-Analysts**

If you thinking of doing contract work why not start here by registering now for immediate and forthcoming requirements.

For further details contact: Bridget Kotchie

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THANET JOINT COMPUTER COMMITTEE
SYSTEMS ANALYST/PROGRAMMER
£4,773-£5,588 p.a. incl. (AP5/801)

The Committee operates a Honeywell 62/40 on behalf of the Thanet and Dover District Councils and consideration is being given to the use of on-line applications by both user authorities. A suitably experienced person is required to assist in improving existing systems and developing new systems. Applicants should preferably have a sound knowledge of systems analysis and programming in COBOL. Consideration will be given to housing accommodation and a generous disturbance allowance scheme is in operation. Applications giving full details of experience to date to: The Computer Manager, Thanet Computer Centre, Haine Road, Ramsgate, Kent CT12 5AA by 15th May, 1979.

**2903/4
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Our Clients are one of the foremost manufacturers of mini computers in the world. Their presence in the United Kingdom and Europe has been envied and respected for many years.

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Due to increased demand by their users, they are to open a separate division in the United Kingdom responsible for applications software thereby giving them the ability to offer total systems. This decision has lead to the creation of two senior positions:

PROJECT MANAGER/ MARKETEER**CIRCA £10,500 P.A. PLUS CAR**

This key role will probably be filled by the eventual manager of the new division. The job is multi faceted and essentially involves marketing support to the Sales force and interfacing with Clients and prospects in defining and qualifying business involvement with them.

Clearly, candidates should be very technically capable and have a wide range of applications knowledge within scientific or commercial disciplines or both. The eventual objective is to manage the division through a hierarchical structure as it develops.

Applicants currently in, or who have held, senior support roles with a manufacturer or software house are likely to best identify with our requirements.

SENIOR ANALYST/ PROGRAMMER**CIRCA £8,000 P.A. PLUS CAR**

Candidates for this position will have a minimum of five years' experience on minis and a good working knowledge of both assembler level and high level (e.g. COBOL, BASIC, PL1, FORTRAN) languages. The last two years would have been spent as a Senior Analyst/Programmer preferably on commercial systems.

It is essential that the analysis experience has been over a wide range of applications, preferably commercial, and the ability to manage a team is also significant.

WITHIN THEIR RELATIVE STRATA, THESE MUST BE TWO OF THE MOST EXCITING POSITIONS CURRENTLY VACANT AND BOTH HAVE EXCELLENT CAREER DEVELOPMENT OPPORTUNITIES.

FOR FURTHER INFORMATION AND TO ARRANGE AN INTERVIEW, PLEASE TELEPHONE THE ADVISING DIRECTOR, BOB BOWER.

Ref: CW/189

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Hutton
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The post is responsible to the Audit Manager for providing a comprehensive computer audit coverage and includes the integration of computer held information and involvement in the development of the Region's computer systems.

The installation is continually developing and is currently a Burroughs twin processor B4800 and 4700 with an extensive terminal network for on-line enquiry and updating facilities.

You will need to have a degree or professional qualification and an in depth understanding and experience of large scale computer systems and operations. Accounting or Audit experience would be an advantage but, if necessary, training will be given.

Prospects exist for development beyond Audit throughout British Gas.

Salary will be in the range £6880-£8160, plus current self-financing productivity payment and the benefits normally expected of a large progressive organisation including assistance with relocation expenses where appropriate.

For further information and an application form please telephone (0222) 33131 extension 3201 or write to the Personnel Development Manager, Wales Gas, Snelling House, Bute Terrace, Cardiff.

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Starting salary not less than £5163 plus
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Equipment Installation Management
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Trouble-shooting
In-House Testing of New Developments

We expect that the successful applicant will have had several years practical experience of data communications, possibly with a telecommunications organisation, or a terminal equipment supplier, and will now be looking for broader experience in large scale Data Network Management.

Write giving full details, within 7 days, and quoting Ref. 0.5098 to: Personnel Manager, Segas, Segas House, Katherine Street, Croydon CR9 1JU.

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Telephone: 01-637 8861 (day) - 01-636 9685 (eves.)

A. McDowell Knaggs

COMPUTER RECRUITMENT, TRAINING & CONSULTANCY

Our successful Training and Consultancy activities have now been supplemented by the addition of a Permanent Staff Recruitment Division.

Being based in Worcester gives us access to **WORCESTERSHIRE, GLOUCESTERSHIRE, HEREFORDSHIRE and WEST MIDLANDS.** It is in these areas that we have been asked to recruit computer Professionals, from Programmers (at £3800) to Top Flight Managers (at £15,000).

Our most urgent needs is for **PROGRAMMING AND SYSTEMS** staff.

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£3800 to £7000
GLOS./WORCS./B'HAM
All levels of Programmers inc. Senior Programmers and Team Leaders: ICL, IBM, BURROUGH, DEC and D.G. SITES running commercial and technological/scientific applications.

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OPS. & OPS. SUPPORT

£5AL NEG. GLOS./B'HAM
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For complete details of these and other vacancies contact DON KNAGGS on 0905 427077 (0299 400036 EVENINGS/WEEKENDS) or write to THE MOUNT, 1 ST. JOHNS, WORCESTER.

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Digital Exploration Ltd. are the UK subsidiary of one of the world's leading independent geophysical contractors to the petroleum industry, Digicon Inc. of Houston, Texas.

As our young company expands, the small programming team needs men and women with a strong scientific/mathematical background to learn the specialised techniques we use in processing seismic data from Europe, the Middle East and Africa.

We are incorporating the powerful VAX 11/780 system into our international computer network, and you will be involved in the development of software for our latest advanced processing technique.

You will both need at least 3 years' experience in Fortran and assembly languages, and for the senior position some previous management responsibility is desirable. We offer a creative environment in pleasant surroundings, BUPA membership, free life assurance and contributory pension scheme, and salaries that will fully reflect your background and experience.

Please write with c.v. to the Processing Manager, Digital Exploration Ltd., Digicon Building, Portland Road, East Grinstead, Sussex RH19 4EB.

Tel: East Grinstead (0342) 28111.

ELF OIL (G.B.) LIMITED

SYSTEMS ANALYST

N. West C. £6000 +

Elf Oil (G.B.) Ltd. is the U.K. marketing subsidiary of an international oil company.

THE JOB

We require a Systems Analyst to investigate and analyse operational and commercial areas of our business, producing feasibility studies, system specifications and outline programme specifications for implementation by either internal or external programming resources.

THE PERSON

Applicants must have 3 years systems analysis experience and should have been responsible for the implementation of at least one major system from conception to completion. The person appointed will be responsible for the total data processing function in the absence of the Data Processing Manager.

THE REWARDS

Salary is negotiable in excess of £6000 and in addition, company benefits include 4 weeks holiday, £5 per week luncheon vouchers, a generous pension and life assurance scheme and pleasant working conditions.

Please write or telephone for an application form to: Mrs. S. Angus Personnel Officer, Elf Oil (G.B.) Ltd., Elf House, PO Box 80, Altrincham, Cheshire WA14 1HD. Tel: 061-928 6477.

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PDP Basic Programmers - HOLLAND c. £20,000 p.a.
A large successful Chemical Company have immediate and future vacancies for Basic, Basic + 2 and Mumps people to work on a variety of different systems. Remuneration will be c. £20,000 p.a.

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+ COBOL	INTEL 8080	- GERMANY
VENTEK DATASHARE	ASSEMBLER	
PDP DATABASE	PDP FORTRAN	- HOLLAND
DESIGNER	PDP FORTRAN	
PDP ASSEMBLER/CORAL	+ REALTIME	- BRUSSELS

Call Richard Kaluzynski, Neil Williams or Suzy Gilham for details.



All vacancies are open to both male and female applicants. Phone anytime, or for an application form leave your name and address with our answering service.

Knight Computer Services Ltd.

14 Old Park Lane, London W1Y 4NL

Staff Services Division of BOC DataSolve Group and a member of Computing Services Association

IMS Experience? Earn up to £12,500 p.a.

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MINI/MICRO PROGRAMMERS & ANALYSTS

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Salaries, negotiable according to experience. Free life assurance and contributory pension schemes together with generous assistance with relocation expenses where applicable.

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Brake and Signal Co Ltd Chippenham Wilts

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- Project and management skills
- Experience of interactive systems

Fringe benefits include housing, education subsidies, generous relocation allowances and home leave allowances.

We are hopeful of filling these positions in the very near future. Applications in writing giving experience, qualifications, present position, salary, age and age of dependants to:

Recruitment Attache,
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Papua New Guinea

Analyst/Senior Programmer

To lead a team responsible for the detailed design of interactive and batch media information processing systems, using a GEC 4070 computer. You should have at least 5 years' experience in assembly and high level languages including FORTRAN IV and you should also be familiar with at least one Operating System and Job Control Language. Experience of multi-access systems and a knowledge of BASIC and CORAL 66 are desirable.

Programmer

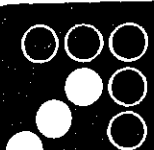
For flowcharting, writing and testing of programs, using a GEC 4070 computer.

Reporting to the Senior Programmer, you should have a minimum of two years' programming experience in FORTRAN and at least one assembly language. Some knowledge of BASIC and CORAL 66 is desirable.

Please telephone for an application form, or write quoting ref: P/87 to:

Jack Burnie, Marconi Space & Defence Systems Ltd., Applied Electronics Laboratories, Browne Lane, The Airport, Portsmouth, Tel: Portsmouth (0705) 698414.

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England
East Anglia**

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Our client generally expects its Sales Executives to earn

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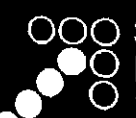
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If you are seeking to advance your career rather than simply looking for another job then you need the objective guidance of an organisation which is totally conversant with all aspects of sales and marketing within the computer industry.

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DEPARTMENT OF COMPUTER STUDIES

LECTURER I

In Computer Operations required from 1st September 1979, based at Elstree Way, Boreham Wood

Applications are invited from suitably qualified and experienced persons for the post. Applicants should have considerable practical experience and be prepared to undertake In-Service Teacher Training

Assistance with removal expenses in approved cases

Forms and further details from the Principal at the above address (Telephone: Welwyn Garden 26318, ext. 211) to be returned by Monday, 21st May

COBOL OS

C. LONDON

£210 p.w.

01-262 2251

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Applications are invited for the post of Computer Operator. The Computing Service is based on a Dec-10 with 512K of main store, discs and mag tape. A wide range of software is available for users. Shift work will be required, as the computer is manned from 7 a.m. to 11 p.m. on Monday to Friday. Previous experience is not necessary as training will be given. This is a useful opportunity for anyone who wants to get into computing, and encouragement will be given for career development. Salary on scale to £3148 (inclusive of London Allowance) plus shift allowance. Further information from the Head of the Computing Service, The Polytechnic of North London, Holloway Road, N7 8DB

D.P. MANAGER/ESS

New installation Burroughs B800 under C.M.S. Top Salary Wholesale Fashions.

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THE SALES AND MARKETING BIT

Getting the most out of sales manager's visits

AN essential part of a sales manager's function is to spend some of his time with the troops at the front. Inasmuch as a salesman's success is probably a direct function of the time he doesn't spend in the office, a desk-bound sales manager cannot expect to be in touch with the realities of the sales arena.

A few weeks ago Tony, a minicomputer salesman, wrote asking what I thought was the normal reaction of a client to the sudden appearance of sales management and what was the benefit to all concerned of such accompaniment. He also asked how the salesman could convert to good account a situation where the sales manager fails to show up (recounted from personal experience, by the sound of things!).

The involvement of sales management in an ostensibly normal sales-call situation needs to be viewed from at least three angles: those of the salesman, the sales manager and the client. This analysis should be in the context of what each might hope both to contribute to and gain from the situation. This assumes a positive and constructive attitude on the part of all concerned.

Many salesmen treat a visit from their sales manager as an imposition. It shouldn't be! After all, if the process requires the formalities of creating a false impression then the salesman has a real problem, and if he has, who better to discuss it with than his direct superior? It is essential that a management visit be based on honesty if it is to be constructive. The problems and opportunities which exist for the salesman within his territory should be clearly stated and a basis created on which these problems can be best resolved and the opportunities exploited.

The salesman and the sales manager basically need to be asking the same questions of each other: ● This is the kind of person I am, this is the way I organise my territory and sell the company's products. How can you help me to improve my performance? ● These are the particular sales problems and opportunity situations in which I am involved. How can we work together to achieve the best outcome for our company?

● What new company, product, competitive, general information do you have which can help me sell more effectively? ● These (if any!) are the personal problems which I believe could be or are affecting my performance. I would like you to be aware of them and help me if you feel you can.

Clients by and large welcome visits by management and treat the situation as a confirmation of their importance to the supplier. However, one can get a variety of reactions from clients to the sudden appearance of heavyweights from head office.

Some use such visits as a platform for complaints. Others clam up completely. Some dedicate the session to protecting and praising the salesman. Others are prepared to give information hitherto unavailable to the salesman.

That is why it is important for each call to be planned individually according to the salesman's assessment of the situation and the personalities involved so that the role of the visiting sales manager can be used to best effect.

Whatever strategy is decided upon, any decision involving the pretence that the sales manager isn't a bad idea. The "My colleague from head office" routine is a puerile pursuit.

One of the main points of strategy for such a call is to decide who will lead the conversation. If the situation is an attempt to push for a decision or obtain information which the salesman has been unable to obtain, it might well be advantageous for the sales manager to take control.

Whereas a situation where a client becomes reticent is best handled by the salesman himself. It has to be played by ear and balanced according to the proportion of conversational involvement that creates the most constructive and empathetic atmosphere.

Tony's experience of his sales manager's non-appearance is the classic "What do you do when the company fails to deliver?" In my opinion the best action for the salesman to take is to tell a white lie and blame himself, and thus avoid any implied disrespect to the client.

No matter how questionable the sales manager's judgment in terms of priorities and ethics, the salesman should not criticise his manager in the eyes of the client; to do so is by implication a damnation of the company and its products.

Far better to say something like "I must apologise, Mr Manager's absence is entirely my fault. I gave him the wrong date. I hope we can arrange another meeting soon."

The means the salesman utilises for subsequently kicking his sales manager in the appropriate quarter is a matter entirely for his personal judgment. However, a formal apology from the sales manager to the client, whoever is blamed for the faux pas, can do no harm at all.

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